<table>
<thead>
<tr>
<th>ACTION ID</th>
<th>DETAILS</th>
<th>RESPONSIBILITY</th>
<th>STATUS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Director to consolidate feedback gathered on the “Why, How, What” Discussion of the Grounding Principles and Graduate Attributes and appoint a group to review the efficacy of the current educational programs against the identified mission/values</td>
<td>Alistair Rendell</td>
<td>Ongoing</td>
<td>Progress to be provided at next CDC Meeting – Date to be Confirmed (Semester 2, 2015)</td>
</tr>
<tr>
<td>2</td>
<td>ALTC Graduate Attributes to be circulated to the Committee for review</td>
<td>Lynette Johns-Boast</td>
<td>Ongoing</td>
<td>By COB Friday 6th June 2015</td>
</tr>
<tr>
<td>3</td>
<td>Circulate considerations for Grounding Principles and Graduate Attributes to the Committee for consideration</td>
<td>Dirk Pattinson</td>
<td>Ongoing</td>
<td>By COB Friday 6th June 2015</td>
</tr>
<tr>
<td>4</td>
<td>Working Group to identify issues around Master course prerequisites, majors and odd/even offerings</td>
<td>Lynette Johns-Boast Tom Gedeon</td>
<td>Ongoing</td>
<td>Progress to be provided at next CDC Meeting – Date to be Confirmed (Semester 2, 2015)</td>
</tr>
<tr>
<td>5</td>
<td>Proposed amendments to COMP8701/ENGN8150 and COMP8705/ENGN8160 supported and will adhere to the following implementation Plan: 1. Amendments to Course Descriptions and Learning Outcomes to be updated on Programs and Courses (as per report approved at 2/2015 CEC 30/04/2015); 2. Amendments to Course Titles and Codes to be reviewed in the context of internal MCOMP Program audit and recommendations from the Working Group.</td>
<td>1. Natalie Young 2. Ramesh Sankaranarayana Lynette Johns-Boast Tom Gedeon</td>
<td>Ongoing</td>
<td>1. By COB Friday 6th June 2015 2. Progress to be provided at next CDC Meeting – Date to be Confirmed (Semester 2, 2015)</td>
</tr>
<tr>
<td>6</td>
<td>List of Co-Badged Courses to be provided to AD(Edu) CS for review and decision on 3XXX/4XXX coding and Learning Outcome revision requirements (in line with AQF 7/8 standards)</td>
<td>Natalie Young Ramesh Sankaranarayana</td>
<td>Ongoing</td>
<td>Report attached – 26/05/2015; response required ASAP</td>
</tr>
<tr>
<td>7</td>
<td>AD(Edu) CS and ENG to develop Guiding Principles for 3XXX/4XXX Course Mapping (including course codes).</td>
<td>Ramesh Sankaranarayana Rod Kennedy</td>
<td>Ongoing</td>
<td>Progress to be provided at next CDC Meeting – Date to be Confirmed (Semester 2, 2015)</td>
</tr>
<tr>
<td>8</td>
<td>AD(Edu) CS to articulate coherent pathway options (e.g. Minor/Major) for students to complete that incorporate Art/Craft of Computing within the BIT program</td>
<td>Ramesh Sankaranarayana</td>
<td>Ongoing</td>
<td>Progress to be provided at next CDC Meeting – Date to be Confirmed (Semester 2, 2015)</td>
</tr>
<tr>
<td>9</td>
<td>AD(Edu) CS to review Courses within BSENG and BAC to determine required amendments/co-badging/recoding (in line with AQF8 level standards)</td>
<td>Ramesh Sankaranarayana</td>
<td>Ongoing</td>
<td>Response required ASAP (for minor amendments to be processed in time for Semester 2, 2015).</td>
</tr>
<tr>
<td>10</td>
<td>AD(Edu) CS to collate feedback from the Committee on the proposed amendments to the Course Description and Learning Outcomes for COMP2560.</td>
<td>Ramesh Sankaranarayana</td>
<td>Ongoing</td>
<td>Response required ASAP (for minor amendments to be processed in time for Semester 2, 2015).</td>
</tr>
</tbody>
</table>
The Learning and Teaching Academic Standards project (LTAS) was commissioned by the Department of Education, Employment and Workplace Relations (DEEWR) as one of a range of initiatives working towards the establishment of a new quality assurance regime in Australian higher education as outlined in Transforming Australia’s Higher Education System. The ALTC had funded a number of earlier initiatives which focused on developing better understandings of academic standards within a discipline-based approach and this project was a logical extension of the long-standing commitment by the ALTC to this area.

I wish to record my appreciation to the Board of the ALTC for their strong commitment to and enthusiastic support for the project, as well as to DEEWR for their support.

Special recognition, however, must go to the Discipline Scholars whose skills in working with each of their disciplines across the spectrum from academic to professional practice ensured the success of the project. Each scholar was supported by a project officer and reference groups of senior members of the discipline. The effectiveness of these teams is evidence of their belief in the value of defining and maintaining standards within their disciplines. This is evident also in the intention of all groups to progress further with the standards-setting agenda even after the formal life of the project has concluded.

Appreciation is also due to the members of the LTAS Project Steering Group for their unflagging support and good advice and to the project team at the ALTC, led by Emeritus Professor Christine Ewan, for their outstanding work.

Because this project has been explicitly a team effort involving scores of people there is no attribution of authorship of this report. The various committee and reference group members are acknowledged in each Discipline Standard Statement Booklet but I would like to acknowledge in this foreword, the first cohort of Discipline Scholars who have contributed to this report. They are:

- Professor Iain Hay Arts, Social Sciences and Humanities
- Associate Professor Mark Freeman Business, Management and Economics
- Professor Jonathan Holmes Creative and Performing Arts
- Professor Ian Cameron and Associate Professor Roger Hadgraft Engineering and ICT
- Professor Amanda Henderson and Associate Professor Maree O’Keefe Health, Medicine and Veterinary Science
- Professor Sally Kift and Professor Mark Israel Law

Dr Carol Nicoll PSM
Chief Executive Officer
Australian Learning and Teaching Council
EXECUTIVE SUMMARY

The Australian Government is developing a new Higher Education Quality and Regulatory Framework which includes the establishment of the Tertiary Education Quality and Standards Agency (TEQSA). TEQSA will be a national body overseeing the regulation and quality assurance of tertiary education against agreed standards.

At the time this project was undertaken the standards framework was in development and comprised several elements. Two elements, relating to academic standards, required the involvement of academic communities and disciplines in defining learning outcomes to guide curriculum development, and designing assessment that assures graduates have achieved a threshold level of competence in the discipline.

Those elements are:
- qualification standards as embodied in the revised Australian Qualifications Framework, and
- learning and teaching academic standards comprising indicators of learning and teaching achievement and quality.

The Australian Government, both directly through a specific contract and indirectly through base funding of the Australian Learning and Teaching Council, funded a one-year demonstration project to inform the further development of Learning and Teaching Academic Standards (LTAS project).

The LTAS project aimed to define and describe threshold learning outcomes in selected specific discipline areas.

Threshold learning outcomes were defined in terms of minimum discipline knowledge, discipline-specific skills and professional capabilities including attitudes and professional values that are expected of a graduate from a specified level of program in a specified discipline area.

Six broad discipline groups participated in the demonstration project, others have proceeded during 2011. The six initial discipline groups were:
- arts, social sciences and humanities
- business, management and economics
- creative and performing arts
- engineering and ICT
- health, medicine, and veterinary science, and
- law.

A Steering Group chaired by a vice-chancellor and member of the ALTC Board and comprising senior members of the academic and professional communities and DEEWR was appointed to oversee the project implementation.

The principal objectives of the project were to:
1. engage discipline communities and institutions in the standards-setting agenda
2. define the appropriate level of detail and specificity for program/degree learning outcomes on a discipline-by-discipline basis
3. articulate the relationships between program/degree level threshold learning outcomes and existing professional or academic accreditation standards and express that relationship in an academic standards framework
4. achieve national agreement on a set of threshold learning outcomes for the disciplines
5. create a bank of peer-reviewed resources (for inclusion in the ALTC Resource Library) for reference, and
6. produce a final report comprising six discipline components and a summary report of ‘lessons learned’ for future implementation.

A project implementation team was appointed comprising:
• a project leader with experience in senior management in universities, higher education and accreditation in the professions and extensive experience in outcome based curriculum development and national education policy
• Discipline Scholars, with senior academic leadership experience, outcomes-based curriculum design experience and international recognition in their disciplines, to lead each of the discipline projects
• project officers to assist each of the Discipline Scholars
• discipline reference groups to support each discipline project, and
• support staff located at the ALTC to assist the project director and discipline groups.

The key deliverable for each Discipline Scholar was the production of a document of threshold learning outcomes for the specified discipline at an agreed level by the end of 2010. Those booklets have been published separately on the ALTC website and in booklet form.

Section 1 of this report describes the planning and implementation of the project and Section 2 its achievements, both in terms of meeting the objectives and in terms of impacts beyond those objectives. Section 3 summarises the lessons learned in terms that can be applied to subsequent work in this area. Those lessons have been incorporated into a revised ‘how to’ website for disciplines who subsequently conduct this work. Section 4 outlines aspects of a sustainable system for incorporating learning outcomes into quality assurance processes.

In brief, the project has achieved six sets of threshold learning outcomes (TLOs) developed in close consultation with the sector. The TLOs have undergone a number of feedback/refinement cycles and are:
• clearly articulated
• assessable
• written for a broad audience, including academics, students, parents and employers
• contemporary and forward thinking, and
• situated in a national and international context.

The supporting documentation in each set provides the necessary context for the TLOs to be read and understood. It includes information related to the:
• nature and extent of the discipline
• scope of the Standards Statement
• notes on the TLOs, and
• the relationship between the TLOs and other benchmark statements, most notably those developed overseas.

In addition to these booklets, widespread support and endorsement of both the product (TLOs and accompanying documentation) and the process by which they were developed has been achieved. Reference/advisory group members, most of whom are senior disciplinary leaders, eg chairs of peak academic bodies, chairs of councils of deans, chairs of employer groups, have endorsed or supported the product and process. Endorsement was also provided by the majority of discipline-specific professional bodies. Examples of explicit support for and implementation of the TLOs in practice are described in Section 2. Taken together they provide objective evidence of the impact of this project and of the willingness and capacity of discipline groups, at the highest levels, to engage in such a process and to carry it forward as positive reform in their disciplines.

A growing number of disciplines falling outside the scope of this demonstration project have also sought to become involved in the process. In particular, they have expressed interest in developing TLOs in their discipline and have sought support from the ALTC to conduct this undertaking, namely to be advised on the processes associated with the development of discipline-based TLOs. In response, a discipline Partner Pack was devised, which provides a
suite of documents and templates developed by the ALTC in the LTAS project. This Pack is available on the website.

As part of the shift towards outcomes-based quality assurance arrangements, it was envisaged that various stakeholder groups would need support in their standards-setting/regulation obligations, e.g., the assessment of academic standards, by having access to a variety of standards-related resources to use as reference points, examples, and so forth. Outputs from completed ALTC-funded projects and fellowships have been identified as an existing collection of resources suitable to assist stakeholder groups. Another collection of resources was identified during the LTAS project as the Discipline Scholars embarked on defining learning standards within their specific disciplines. Using these resources as a starting point, and leveraging off the ALTC’s existing IT infrastructure, a new resource library was developed. It is also described in Section 2.

Collectively, the outcomes of the LTAS project have laid some of the foundations necessary for the Government’s proposed reform agenda, particularly those related to the “new era of quality in tertiary education”. Specifically, this project has laid the foundations for:

- whole-of-program curriculum review and reform based on a national understanding of the core attributes required of a graduate in the discipline
- strengthened learning culture within the higher education sector
- integrated quality assurance arrangements satisfying multiple stakeholder groups including: academia, employer groups, professional associations and accreditation bodies
- holistic assessment practices suitable for assessing the full range of defined capabilities
- maintaining confidence in the quality assurance arrangements employed
- cultural change characterised by optimism and cross-sectoral collaboration
- comprehensive national benchmarking arrangements involving public and private providers and the ongoing engagement of international experts in discipline-based learning outcome definition, and
- a place for Australia in the global outcomes-based graduate mobility agenda with Tuning Europe, USA, Canada, Latin America, Lithuania, Russia, Africa, Asia and the Middle East.

None of the LTAS project’s demonstration disciplines began at a zero-base in their development of TLOs. Each had a number of sources to draw upon, including international reference points and various national competency/accreditation statements. Sources also resided in individual institutions where many had adapted their graduate attribute statements to the disciplinary level. They also resided in individual schools/departments where subject outlines and conversations with academics gave indications of learning outcome expectations. Most of these sources, however, were implicit and localised. The major outcome to note is that this project has made the localised and implicit explicit at the national level. Through the intensively consultative process undertaken, members of stakeholder groups were given the opportunity to share their assumptions with others and to have them discussed and debated at a national level. They were also able to share and provide feedback on local practices and underlying frameworks existing within the sector.

Factors critical to the success of the project are described in some detail in Chapter 3 but can be summarised as:

- the policy stimulus to engage in standards-setting for quality improvement as well as quality assurance
- clear and sincere commitment to discipline groups being responsible for setting their own standards
- senior discipline leader buy-in to reinforce the ownership of the standards-setting process
- clear parameters in which to set standards, e.g., four-six outcomes
- focus on outcomes first, allowing that to lead into other core issues such as assessment
- multi-stakeholder involvement including private providers, accrediting agencies, professional bodies, employers and recent graduates
- recurrent engagement with the discipline community at all levels
- consideration of international benchmarks
- a transparent and inclusive consultation process
- respect for expertise residing at the discipline level, and
- explicit use of existing networks.
Although important, the Government’s policy stimulus was not the only factor in the success of the project. Disciplines did not undertake the project merely to satisfy emerging compliance obligations, ie to be used by TEQSA in some way. It became an organisational development exercise at the disciplinary level, with an opportunity to address other problematic and interrelated issues. The Government’s policy stimulated disciplines to make explicit their own standards, and encouraged them to take responsibility for the quality of graduates as a discipline rather than as a loose collective of academic departments. The opportunity was embraced by the participating discipline communities, and clearly contributed to the project’s success.

The LTAS project has identified conditions under which threshold learning outcomes can be developed and ‘owned’ by discipline communities. One of the deliverables for the LTAS project was, through consultation, to highlight and evaluate opportunities for sustainable incorporation of TLOs into the new quality assurance regime. Section 4 sets out suggestions for a sustainable process for developing, maintaining and monitoring disciplinary-based academic standards.

In sum, this project has succeeded beyond expectations in the level of engagement of discipline communities that it has achieved. It has earned acceptance both as a successful project and for the new quality assurance framework. It has credibility, high national visibility and an extraordinary level of active stakeholder involvement at a senior level. This success, however, carries a risk. Failure to follow through on the commitment made by the professional and academic bodies and peak industry groups will create a credibility gap. At risk is the loss of goodwill from major stakeholders which will be essential to their future involvement in the higher education quality assurance framework.
1. Background and Implementation

1.1 Policy background

The LTAS project developed in the context of a number of related initiatives in higher education in recent years. Of these, the four most relevant are: (1) the Australian Government's recently proposed reform agenda for higher education and research, (2) the Review of Australian Higher Education, (3) international attention to academic standards, and (4) the ALTC's development of discipline-based project networks. Each of these initiatives is outlined below as background to the project.

The Government's reform agenda

The Australian Government's higher education reform agenda, presented in *Transforming Australia's higher education system*, proposes to "transform the scale, potential and quality of the nation's universities and open the doors of higher education to a new generation of Australians" (p 5). It is a phased ten-year agenda including, at least, ten landmark reforms to "boost Australia's national productivity and performance as a knowledge-based economy" (p. 9).

The Government's summary of these reforms is presented in Box 1, with the sixth on this list, 'A new era of quality in tertiary education', relating most directly to the LTAS project. Arising from Recommendation 19 of the Review of Australian Higher Education (Bradley Review), this reform announces the establishment of:

(a) a new national body for regulation and quality assurance, the Tertiary Education Quality and Standards Agency (TEQSA)
(b) a standards-based quality assurance framework, and
(c) new quality assurance arrangements.

TEQSA has been allocated $57 million over a four-year period starting 2009–10 and will build on the foundations established by the Australian Universities Quality Agency (AUQA). TEQSA will serve a number of national quality assurance functions. Its broad purpose is to "enhance the overall quality of the Australian higher education system".

The scope of the proposed standards framework is broad and emerging. However, its general aim was described in *Transforming Australia's Higher Education System* as follows: "The framework will establish minimum standards that higher education providers are required to meet in order to be registered and accredited, as well as academic standards" (p 32). At the time the LTAS project was undertaken, the framework comprised five areas: (1) Provider Registration Standards, which contains a more specific sub-set of Provider Category Standards, (2) Qualification Standards, (3) Information Standards, (4) Teaching and Learning, and (5) Research Standards. It is the fourth of these areas – Teaching and Learning – that relates to the LTAS project. This area of the framework deals with "benchmarks for teaching and learning quality assurance".
The Government’s proposed reform agenda

The Government is proposing a phased ten-year reform agenda for higher education and research to boost Australia’s national productivity and performance as a knowledge-based economy.

Key reforms include:

- **Real action for real participation** – attainment, access and engagement: transforming access to higher education through a major package designed to radically improve the participation of students from low socio-economic backgrounds (low SES) in higher education, and enhance their learning experience.

- **A growing higher education sector**: promoting greater diversity and quality within the tertiary sector by phasing in a new system to allocate funding on the basis of student demand; support to encourage more students to choose teaching and nursing and to study overseas; and support for the renewal of student services and amenities.

- **A sustainable tertiary education sector**: providing funding certainty and creating a more sustainable higher education sector through higher indexation of teaching and learning grants.

- **Sustainable investment for research**: ending historic funding cross-subsidisation by increasing funding for the full cost of university research, and enabling universities to strive for research excellence in areas of strength.

- **Transforming Australia’s tertiary education infrastructure**: a massive upgrade of university and TAFE infrastructure to meet the teaching and learning requirements of students, teachers and researchers now and into the future.

- **A new era of quality in Australian tertiary education**: establishing the Tertiary Education Quality and Standards Agency (TEQSA), which will provide the foundation for enhancing quality and accreditation in higher education.

- **Income support for students**: landmark reforms to student income support which will redirect assistance so that it reaches the most needy students to boost both their higher education participation and attainment.

- **A fair deal for Australia’s regions**: reviewing regional tertiary education provision with a review of regional loading, encouragement to explore new models of delivery and access to new structural adjustment funding for the sector.

- **Improving tertiary pathways**: building stronger connectivity between the higher education and vocational education and training sectors.

- **A new relationship between government and educators**: a relationship built on mutual respect, trust and agreed funding compacts.

Transforming Australia’s Higher Education System (p. 9)

The new quality assurance arrangements are envisaged by the Australian Government to be consultative, particularly in relation to development of the academic/learning and teaching standards:

Key to the success of the new quality assurance arrangements – and meaningful academic standards in particular – will be the active involvement of the academic community. It will be critical to strike the right balance to avoid generalisation or over-prescription.

The Government will ensure that the new arrangements are developed in close consultation with the sector. Discipline communities will ‘own’ and take responsibility for implementing academic standards (working with professional bodies and other stakeholders where appropriate) within the academic traditions of collegiality, peer review, pre-eminence of disciplines and, importantly, academic autonomy (Transforming Australia’s Higher Education System, p 32).
Two recommendations of the Bradley Review, Recommendations 19 and 23, provide additional information on the reform agenda and its relationship to the LTAS project.

Recommendation 19 deals with the independent national regulatory body that has since become TEQSA, and the associated framework central to the body's operations. The following extract from Recommendation 19 highlights the specific reference to "learning outcomes".

That the Australian Government adopt a framework for higher education accreditation, quality assurance and regulation featuring:

- accreditation of all providers based on their capacity to deliver on core requirements including:
  - new quality assurance arrangements involving the development of standards and implementation of a transparent process for assuring the quality of learning outcomes across all providers of higher education; and
- an independent national regulatory body responsible for regulating all types of tertiary education. In the higher education sector it would:
  - Carry out quality audits of all providers focused on the institution's academic standards and the processes for setting, monitoring and maintaining them. This would include auditing the adoption of outcomes and standards-based arrangements for assuring the quality of higher education (p 116).

Recommendation 23 is also particularly relevant to the LTAS project, (see Box 2) as its preamble emphasises the need to develop the outcomes outlined in Recommendation 19 in a disciplinary context with discipline-level quality assurance processes. As clarified in the following excerpt:

A discipline-based approach will be required to strengthen the quality assurance framework as the nature and level of learning outcomes in higher education depend heavily on the particular field of study and reflect the judgments of those who are expert in it. While generic standards in the National Protocols or the Australian Qualifications Framework provide important reference points, by themselves they can only describe the nature and level of expected learning outcomes to a limited extent without being contextualised in specific disciplines. Moreover, standards evolve and are not absolute or timeless – rather they are continually being re-defined and created as knowledge grows in existing fields and as new fields emerge (reference given). Standards that do not capture this dynamism will not be credible (p. 133-4).

Recommendation 23 from the Bradley Review

That the Australian Government commission and appropriately fund work on the development of new quality assurance arrangements for higher education as part of the new framework set out in Recommendation 19. This would involve:

- a set of indicators and instruments to directly assess and compare learning outcomes; and
- a set of formal statements of academic standards by discipline along with processes for applying those standards.

Bradley Review of Higher Education (p. 137)

The Bradley Review discusses the need to develop discipline-level academic standards and to explore the processes associated with this approach. In particular, the aim of this work "should be to judge whether this methodology will assist Australia to put into practice the most systematic and advanced system of assurance of learning outcomes as soon as possible" (p. 136).

International trends

The third initiative related to the LTAS project concerns international trends in the development and measurement of learning outcomes. A number of countries are engaged in articulation and monitoring of learning outcomes and comparable work in Australia is desirable for many reasons, particularly to ensure international employability of Australian graduates.

One such initiative is the Tuning Project. This project began in Europe as the “universities’ contribution to the Bologna process” and is based on a ‘tuning’ methodology that seeks to (re-) design, develop, implement, and evaluate study programs at various levels, eg bachelors, masters. The Tuning Project provides a platform for developing reference points expressed in terms of learning outcomes and competences at subject area level. The LTAS project has collaborated and compared approaches with leaders of the European Tuning Project and has used the Tuning Discipline documentation as reference material for development of the threshold learning outcomes.
International learning outcome-related projects specifically mentioned in the Bradley Review include the Assessment of Higher Education Learning Outcomes (AHELO), a feasibility study being conducted by the Organisation for Economic Co-Operation and Development (OECD), in which Australia is participating. Another is the comprehensive subject benchmark statement work undertaken in the United Kingdom over the last ten years. Initiatives taking place in Ireland, Scotland and a number of Canadian provinces were also noted in the review.

ALTC’s discipline-based project networks

The ALTC’s Discipline-based Initiative scheme was specifically mentioned in the Bradley Review as one way to assist in the implementation of academic standards across discipline communities. The ALTC’s network structures, particularly those arising from the Discipline Support Strategy, provided the platform to not only implement these standards, but to facilitate their development. Moreover, as a result of funding over 70 standards-related projects, the ALTC has the experience, contacts and credibility to support discipline communities in the development of standards.

1.2 The Learning and Teaching Academic Standards (LTAS) project

The Australian Government, both directly through a specific contract and indirectly through base funding of the Australian Learning and Teaching Council, funded a one-year demonstration project to inform the further development of Learning and Teaching Academic Standards.

Scope

The project takes as its starting point the award-level descriptors defined in the Australian Qualifications Framework (AQF)\(^1\) http://www.aqf.edu.au/ . The AQF provides considerable detail but, at its simplest level, expected outcomes are described for each level of qualification. For example, graduates at the level of a bachelor degree are expected to have broad and coherent knowledge and skills for professional work and/or further learning.

The LTAS project aimed to define and describe threshold learning outcomes encompassed within that “broad and coherent knowledge and skills for professional work and/or further learning” in selected specific discipline areas.

Threshold learning outcomes were defined in terms of minimum discipline knowledge, discipline-specific skills and professional capabilities including attitudes and professional values that are expected of a graduate from a specified level of program in a specified discipline area.

Purpose and objectives

The purpose of the LTAS project was to facilitate and coordinate discipline communities’ definition and dissemination of academic standards.

The objectives of the project were to:

1. engage discipline communities and institutions in the standards-setting agenda
2. define the appropriate level of detail and specificity for program/degree learning outcomes on a discipline-by-discipline basis
3. articulate the relationships between program/degree level threshold learning outcomes and existing professional or academic accreditation standards and express that relationship in an academic standards framework
4. achieve national agreement on a set of threshold learning outcomes for the disciplines
5. create a bank of peer-reviewed resources (for inclusion in a repository) for reference by both TESQA and institutions in developing their processes further.
6. produce a final report comprising six discipline components and a summary report of ‘lessons learned’ for future implementation.

Discipline areas encompassed in the demonstration project

Broad discipline areas were defined according to Australian definitions of Field of Education from the Australian Standard Classification of Education. They correspond to the broad structural arrangements of faculties or aggregates of departments within Australian universities.

Six broad discipline groups participated in the demonstration project, others followed in the second half of 2010 and in 2011. The six initial discipline groups were:

- arts, social sciences and humanities
- business, management and economics
- creative and performing arts
- engineering and ICT
- health, medicine, and veterinary science, and
- law.

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1. As established at the time of commencement of the project. The project also took into account revisions made during 2010.
It was beyond the scope of this project, a feasibility/demonstration project, to facilitate the development of academic standards in all discipline areas. The intent was that these selected disciplines would provide the blueprint for others to follow. Each discipline group also chose which AQF level or levels to work with according to the priorities in their discipline.

**Working definition of ‘academic standards’**

A working definition of ‘academic standards’ was agreed upon for the project:

> Academic standards are learning outcomes described in terms of discipline-specific knowledge, skills and capabilities expressed as threshold learning outcomes that a graduate of any given discipline (or program) must have achieved.

Defining learning outcomes at the threshold level was based on a considered rationale. Threshold does not signal that aspirational outcomes are discouraged. On the contrary, it establishes a baseline above which aspiration can be clearly identified. Threshold learning outcomes offer a number of positive benefits, most notably the following:

- They protect autonomy and diversity by providing institutional scope for ‘aspirational’ learning outcomes to be matched to mission.
- Disciplines, not institutions, ‘own’ and define the core (or threshold) attributes of their discipline.
- The concept of threshold competencies aligns with professional accreditation.
- Threshold outcomes simplify international benchmark comparisons.

**Principles underlying use of academic standards for quality assurance**

To ensure that the process of setting academic standards would be accepted and supported by the academic community, some principles were developed to safeguard this process. These principles were:

1. Overall the process for developing and using academic standards must be collaborative, transparent, evidence-based, outcomes-based, responsive, sustainable and feasible:
   - Academic standards, in the context of this project, will be expressed as threshold learning outcomes (TLOs) that are able to be assessed. Descriptors of input and process, eg student/staff ratios, student entry scores, class sizes, teaching methods, may support but are not substitutes for evidence of achievement of threshold learning outcomes.
   - Threshold learning outcomes will ultimately and ideally be defined by each discipline community for each level of qualification, ie bachelors, masters, doctorate.
   - Regular review of TLOs will be required to maintain currency with advances in knowledge and practice.
   - Threshold learning outcomes in Australia must be comparable with appropriate international standards.
   - Processes for assuring and demonstrating that TLOs have been achieved must be efficient, transparent and sustainable, and should include external reference points, and
   - Processes for assuring academic standards must not give rise to perverse consequences, eg standardisation of curricula or standardised tests.

2. Autonomy of academic decision-making must be protected and diversity across the sector must be encouraged:
   - Individual institutions may set their own learning outcome standards beyond the defined threshold learning outcomes in any or all disciplines in response to their individual missions and program objectives.
   - Individual institutions will determine the curriculum, teaching methods, resources and assessment methods leading to the demonstration of the achievement of the defined learning outcomes of graduates in their institution.

**1.3 Project governance and management**

A steering group chaired by a vice-chancellor and member of the ALTC Board and comprising senior members of the academic and professional communities and DEEWR was appointed to oversee the project implementation (See Appendix 1).

A project implementation team was appointed comprising:

- a project leader with experience in senior management in universities, higher education and accreditation in the professions and extensive experience in outcome-based curriculum development and national education policy
- Discipline Scholars, at professorial level with senior academic leadership experience, outcomes-based curriculum design experience and international recognition in their disciplines to lead each of the discipline projects
- project officers to assist each of the Discipline Scholars
- discipline reference groups to support each discipline project, and
- support staff located at the ALTC to assist the project director and discipline groups.

See Appendix 2 for the project team and list of Discipline Scholars and project officers.
1.4 Project Plan

The project officially commenced with a peak disciplinary body national forum. Attendance at the one-day forum was by invitation only to:

- leaders of the professions/disciplinary bodies/scholarly academies/universities
- chairs of councils of deans
- peak bodies from industry and employers, and
- student and graduate representatives.

The main purpose of the forum was to:

- determine the focus for the project in each broad discipline area, eg accounting within business grouping or history within arts, social sciences and humanities grouping
- develop a project plan for each defined discipline project including specific deliverables and timelines, and
- advise on and commit to processes and support structures for the Discipline Scholar.

The LTAS Forum was structured and intended as a ‘working session in discipline groups’ rather than a communication forum. Attendance was by invitation only and the acceptance rate was high. More than 100 people attended and remained for the entire program.

Discipline project plans

The key deliverable for the Discipline Scholar was the production of a document specifying threshold learning outcomes at an agreed level for selected qualification level. To facilitate this work, the Discipline Scholars:

- convened a representative sub-committee of discipline experts, nominated by the discipline group, who were responsible for consultation and approval of drafts
- appointed a project officer to undertake research in support of the discipline sub-committee and organise consultations. Research included interrogating existing ALTC reports and undertaking a wider literature search.
- attended monthly Discipline Scholar meetings at the ALTC to report on progress and insights into the process.

Discipline Scholars produced detailed project plans which varied based on their different starting points in the standards-setting process, discipline priorities and the advice given by forum participants. However, the basic approaches were similar in covering the following eight steps:

1. establishing reference/advisory groups
2. drafting a set of threshold learning outcomes (TLOs) based on the Australian Qualifications Framework and existing work, eg Australian accreditation standards, European Tunings project, UK’s Quality Assurance Agency subject benchmarks
3. seeking feedback from key stakeholder groups on the draft TLOs
4. engaging broader discipline communities in relation to the draft TLOs, the LTAS project, and the new quality and standards framework
5. revising draft TLOs based on stakeholder and broader community feedback and international benchmarks
6. gaining endorsement/ratification of final TLOs
7. disseminating stakeholder endorsed TLOs to the discipline and wider communities
8. documenting the standards-setting process to ensure project sustainability and organisational learning.

The manner in which each of these steps was undertaken, was determined by each discipline group.

Focus of discipline groups

Although the focus varied, each discipline group followed a similar process:

The Arts, Social Sciences and Humanities Discipline Group planned to:

- focus on history and geography as two ‘demonstration disciplines’
- develop TLOs at bachelor level for these two disciplines
- establish two discipline reference groups, one each for history and geography, and
- work closely with key stakeholder groups including the Australasian Council of Deans of Arts, Social Sciences, and Humanities (DASSH), Australian Curriculum, Assessment and Reporting Authority (ACARA), Australian Historical Association (AHA), Institute of Australian Geographers (IAG), International Network for Learning and Teaching Geography in higher education.
education (INLT), and the New Zealand Geographical Society (NZGS).

The Business, Management and Economics Discipline Group planned to:

• focus on the discipline of accounting
• develop TLOs at the bachelor and masters coursework levels for this discipline
• establish both a disciplinary reference group (to assist in the drafting of the TLOs) and an expert advisory group (for the governance function), and
• work closely with key stakeholder groups including the Australian Business Deans Council (ABDC), particularly the ABDC Associate Deans Teaching and Learning Network, Accounting and Finance Association of Australia and New Zealand (AFAANZ), Institute of Chartered Professional Accountants, National Institute of Accountants, CPA Australia, and the Business Council of Australia.

The Creative and Performing Arts Discipline Group planned to:

• focus on the broad discipline of the creative and performing arts
• develop TLOs at both the bachelor and masters coursework levels, and
• work closely with key stakeholder groups including DASSH, the Australian Council of University Arts and Design Schools (ACUADS), Australasian Association for Drama, Theatre and Performance Studies (ADSA), National Council of Tertiary Music Schools (NACTMUS), Tertiary Dance Council of Australia (TDCA), Aus Dance, Australian Association of Writing Programs (AAWP), and the Australian Screen Production Education and Research Association (ASPERA).

The Engineering and ICT Discipline Group planned to:

• focus on the broad discipline of engineering and ICT
• develop TLOs at the bachelor level
• remain internationally focused as engineering and ICT are connected to international accords
• establish both local, Australian-based reference and advisory groups and an international advisory group, and
• work closely with key stakeholder groups including the Australian Computer Society (ACS), Engineering Australia (EA), Australian Council of Engineering Deans (ACED), and the Australian Council of Deans of Information and Communications Technology (ACDICT).

The Health, Medicine and Veterinary Sciences Discipline Group planned to:

• focus on the broad discipline of ‘health’
• develop TLOs reflecting entry to the health professions
• build on existing work on accreditation standards and curriculum frameworks, and
• work closely with key stakeholder groups including Councils of Deans of medicine, dentistry, nursing and midwifery, health sciences, veterinary sciences, health professionals, and allied health.

The Law Discipline Group planned to:

• focus on the Bachelor of Laws degree and develop the appropriate TLOs
• build on existing standards that exist in law
• Work closely with key stakeholder groups including the Council of Australian Law Deans (CALD), Legal Admissions Consultative Committee (LACC), Australian Academy of Law (AAL), Law Council of Australia (LCA), COAG Standing Committee on Legal Practice and Relations with the Legal Profession, Australian Law Students Association (ALSA), Young Lawyers Committee, Australasian Profession Legal Education Council (APLEC), Australasian Law Teachers’ Association (ALTA), and the judiciary.

Detailed information on the rationale for each discipline group’s focus, as well as the steps taken to complete their work is covered in each discipline’s Standards Statement booklet. All booklets are available at http://www.altc.edu.au/resources

1.5 Communication Strategy

A communication strategy to increase understanding and build awareness was designed for the LTAS project, with particular emphasis on providing an ‘official voice’ to ensure the consistency of information. Communicating directly to target groups through keynote addresses and other forms of presentation as well as more informal meetings was essential to gain support and allow dialogue about potentially contentious aspects of the project.

A regular newsletter was developed to ensure the direction and outcomes of the project were communicated clearly. The key message stemming from the project was chosen for the title of the newsletter, Disciplines Setting Standards. A ‘Standards’ section accessible from the ALTC homepage was created and updated regularly.
2. Achievements of the LTAS project

2.1 Project outcomes and impact

The following description of project outcomes and impacts demonstrates that the project exceeded its objectives (refer Section 1) in significant ways. In summary, the project achieved:

• seven sets of threshold learning outcomes (TLOs) with supporting documentation
• disciplinary support/endorsement of the TLOs and the process by which they were developed
• disciplinary commitment to the integration, implementation and ongoing maintenance of developed TLOs
• disciplinary support for the development of TLOs in areas/levels outside the scope of this demonstration project
• uptake/piloting of TLOs in various programs of study
• uptake of the outcomes of the LTAS project by the wider discipline community
• development of resources and processes to support the development of TLOs
• identification of resources and development of search interface (the ALTC Resource Library)
• high levels of involvement/engagement by discipline communities in the quality assurance/standards-setting agenda
• heightened national and international awareness of Government reform agenda, establishment of TEQSA, and outcomes-based quality assurance
• facilitation of discussions between academia, employer groups, professional associations and accreditation bodies on core learning outcomes
• development/synthesis of reference points for national and international benchmarking
• the explicit expression of implicit and localised practices
• disciplinary modernisation
• in-depth disciplinary and institutional consideration of the implications for curriculum, assessment and accreditation, and
• foundations laid for sector-wide reform.

A description of these main outcomes and key impacts is provided below.

Seven sets of TLOs developed with supporting documentation

Each set of TLOs has been developed in close consultation with the sector and has undergone a number of feedback/refinement cycles. The TLOs are:

• clearly articulated
• assessable
• written for a broad audience including academics, students, parents and employers
• contemporary and forward thinking, and
• situated in a national and international context.

The supporting documentation in each set provides the necessary context for the TLOs to be read and understood. It includes information related to the:

• nature and extent of the discipline
• scope of the Standards Statement
• notes on the TLOs, and
• relationship between the TLOs and other benchmark statements, most notably those developed overseas, and existing Australian standards.

Together, these TLOs and supporting documentation form a collection of Standards Statement booklets for the following disciplines/programs of study:

• Accounting (bachelors, masters entry and masters advanced)
• Creative and Performing Arts (bachelors and masters by coursework)
• Health (covering entry to the professions)
• Law (Bachelor of Laws)
• History (bachelor-level)
• Geography (bachelor-level), and
• Engineering and ICT (bachelor-level).

These Standards Statements have been published in booklet format as well as on the ALTC website.
Disciplinary support/endorsement of the TLOs and the process by which they were developed

The TLOs and accompanying documentation, along with the process by which they were developed, have been endorsed by reference/advisory group members, most of whom are senior disciplinary leaders, eg chairs of peak academic bodies, chairs of councils of deans, chairs of employer groups. Discipline-specific TLOs were also endorsed by professional bodies including:

- Australasian Association of Writing Programs (AAWP) Executive Management Committee
- Australasian Association for Theatre, Drama and Performance Studies (ADSA)
- Australasian Council of Deans of Arts, Social Sciences and Humanities (DASSH)
- Australian Academy of Science's National Committee for Geography
- Australian Business Deans Council (ABDC)
- Australian Computer Society (ACS)
- Australian Council of Deans of Engineering (ACED)
- Australian Council of Deans of Information and Communications Technology (ACDICT)
- Australian Council of University Art and Design Schools (ACUADS)
- Australian Council of Professional Historians Associations (ACPHA)
- Australian Geography Teachers Association (AGTA)
- Australian Historical Association (AHA)
- Australian Screen Production and Research Association (ASPERA)
- Council of Australian Law Deans (CALD)
- Deans of Arts, Social Sciences and Humanities
- Federation of Australian Historical Societies (FAHS)
- Engineers Australia (EA)
- Geographical Society of New South Wales (GSNSW)
- History Teachers' Association of Australia (HTAA)
- Institute of Australian Geographers (IAG)
- National Association of Tertiary Music Schools (NACTMUS)
- Royal Geographical Society of South Australia (RGSSA), and
- Royal Geographical Society of Queensland (RGSQ).

‘In principle’ endorsement was given to the Creative and Performing Arts (CAPA) TLOs by the Deans and Directors of Faculties, Colleges and Schools of Creative and Performing Arts at their inaugural meeting. The Australian Council of Professors and Heads of Information Systems (ACPHIS) gave ‘in-principle’ endorsement to the TLOs developed by the Engineering and ICT Discipline Group. At the time of writing, endorsements were also pending from a number of other bodies not due to meet until 2011.

Disciplinary commitment to the integration, implementation and ongoing maintenance of developed TLOs

The integration, implementation and ongoing maintenance of the developed TLOs have been secured in most discipline groups to date: For example:

- In the Law Discipline Group, the project has initiated and supported the formation of a permanent group of associate and assistant deans with responsibility for teaching and learning in law schools. In June 2010, the LTAS: Law project convened a national forum of all Law Associate and Assistant Deans (with attendance from all but two law schools). This was the first time such a group had been convened. In July 2010, the Council of Australian Law Deans (CALD) endorsed the formation of a permanent Law AD Network to continue beyond the life of the LTAS project. A second national forum was held in Melbourne at the end of September 2010. One of the roles of the Network is to drive the implementation phase of the TLOs and to engage with the opportunities provided by the ALTC. CALD has indicated that it will continue to fund this group in order to provide Law ADs with the opportunity to advance legal education practice and research through sharing ideas, resources and the promotion of cooperation between law schools. It is envisaged that there will continue to be two meetings a year, with a discussion of current issues in legal education as the focus. The AD Network proposes to create: a publicly accessible web-based repository of resources in law teaching and learning; a private web-based sandbox for the Law AD Network to develop and work together for teaching and learning ideas in Australian law schools; and, a discussion group for current teaching and learning issues referred to the network from CALD. It seeks to foster professional development for Law ADs, and more formal collaboration for the purposes of benchmarking and the development of ALTC and other grant applications. It also intends working on the ongoing development and implementation of threshold learning outcomes for the discipline of Law.
• The Law Discipline Group project team worked constructively with the Law Admissions Consultative Committee (LACC) to explore how the Threshold Learning Outcomes for Law might relate to the currently prescribed ‘Academic Requirements for Admission’ to practise. Discussion between the Discipline Scholars, certain members of the Council of Australian Law Deans (CALD) and the Chairman of LACC has led to a national proposal to revise the current academic requirements. At its meeting of 21 October 2010, LACC endorsed a proposal "integrating the present academic requirements for admission with the Threshold Learning Outcomes for Law", and referred the proposal to the State and Territory Admitting Authorities, to CALD and to the Council of Chief Justices, with a view to adopting the final proposal at LACC’s first meeting in 2011. If the proposal is adopted by the local Admitting Authorities (as has already occurred in at least one state) and then by LACC in 2011, it will be forwarded to the COAG Taskforce on the National Legal Profession Reform, in anticipation that it will be included in the proposed National Rules for Admission to Practise.

• The Creative and Performing Arts project team convened the first ever meeting of Deans and Directors of Faculties, Colleges and Schools of Creative and Performing Arts. This meeting was attended by 30 Deans or their representatives. Moves are now underway to formally establish a Deans’ Council of Creative and Performing Arts and, with it, a network of Associate Deans, Learning and Teaching, who will have a significant role in the national deployment and implementation of the learning outcomes. This paves the way for a sector-wide forum, capable of addressing national priorities in research and learning and teaching and, following the example offered by the Arts, Social Sciences and Humanities, is likely to play a significant role in the ongoing management of the academic standards project.

• The Academy of Science's National Committee for Geography is considering using the Standards Statement as one of the bases for development of a decadal plan for Geography. A national forum of stakeholders will be convened at the Academy during July 2011. This gathering is modelled on the ALTC's approach to the February forum, which was a key part in the development of academic standards. Invites will include representatives from major relevant government departments, CSIRO, Census, Google, ESRI and other organisations that make use of Geography as well as high-profile individuals who have spoken for Geography in recent times, eg Mr Tim Costello and Mr Dick Smith. Invited participants will be part of the consultation group for the new plan for Geography and three key developments will be proposed as signalling the beginning of the discipline’s renaissance in Australia:
  - the new Geography Standards Statement
  - the new (K-12) Australian curriculum for Geography, and
  - the growing community realisation that Geography – as it can be understood from the Standards Statement – is especially, if not uniquely, well-placed to help resolve key issues facing Australia and the planet, eg climate change, disaster mitigation, boat people, urban encroachment on agricultural lands, catchment management.

This conjunction of events, of which the Standards Statement is a key component, represents a critical moment in the history of the discipline in Australia. Moreover, in this context, this ALTC project has offered elements for a model for long-term strategic planning in one discipline as well as being a lynchpin in its prospective renaissance in academic, scientific and business and communities.

• The Australian Business Deans Council (ABDC) is leading a process, in collaboration with industry and key stakeholders, to assess Accounting learning outcomes against thresholds from 2011. The ABDC has agreed to seed fund this initiative. An ALTC grant application has also recently been approved. This project, ‘Hunters and gatherers: Strategies for curriculum mapping and data collection for assuring learning’, will be led by UTS, with four partner institutions participating, Bond University, QUT, RMIT and USQ. Funds are also being sought from key stakeholder groups such as joint accounting bodies (CPAA, ICAA, NIA), universities, and AFAANZ. Key stakeholders will also participate in-kind, eg offer expertise via reference group, contacts for wider stakeholder engagement, forum locations and sponsorship.

• From the Health, Medicine, and Veterinary Science Discipline Group, Discipline Scholars, Associate Professor Maree O’Keefe and Professor Amanda Henderson (together with colleagues at Monash, The University of Melbourne and The University of Queensland), received funding for an ALTC Priority Project, ‘Harmonising higher education and professional quality assurance processes for the assessment of learning outcomes in health’. This project extends the Health Scholars’ work of this year.
Disciplinary support for the development of TLOs in areas/levels outside the scope of this demonstration project

With the support of the discipline communities, TLOs and supporting documentation will be developed in a number of areas/levels outside the scope of this demonstration project. For example:

- The Australian Business Deans Council has selected the next business discipline for TLO development in 2011. The working group has been established and will be chaired by a member of the Accounting reference group who has gained standards-setting experience this year.

- The Creative and Performing Arts Discipline Group plans to proceed to develop TLOs for the honours, masters by research and PhD levels.

- The Council of Australian Law Deans, at its November meeting, agreed that its next focus should involve consideration of the development of TLOs for the Juris Doctor (JD) at AQF Level 9.

- In the Arts, Social Sciences and Humanities (ASSH), several scholarly societies have signalled their intention to develop threshold learning outcomes for their discipline in 2011 and beyond. These include the Australian Sociological Association, Australian Political Science Association, Asian Studies Association of Australia, and the Australian Anthropological Society. Other ASSH disciplines undertaking, or planning to undertake, TLO development include theology, food studies, demography/population and criminology.

- The Health, Medicine and Veterinary Science Discipline Group, strongly endorsed the need for further refinement/embedding of TLOs in the health disciplines and their accreditation standards.

Uptake/piloting of TLOs in various programs of study

A number of the TLOs developed this year have begun to be ‘used’ by members of various discipline communities. A number of Discipline Scholars have been sent examples where the developed TLOs have been mapped against institutional program objectives and graduate attribute statements. In some instances, the developed TLOs have been used to design curriculum in a pilot-testing capacity. Appendix 3 provides more detail of the take-up of the TLOs by particular discipline communities. Examples, provided by the discipline groups, are summarised below.

- At The University of New South Wales, the Faculty of Law is beginning a comprehensive review of its LLB program, and the LTAS Bachelor of Laws TLOs are being used as the framework within which learning outcomes will be mapped across the degree. At this early stage, the TLOs have been given to all groups working on curriculum issues to inform their discussions. The TLOs have been found to be a very useful way of crystallising the beliefs and aspirations of UNSW law teachers about the learning process and of ‘teasing out’ the importance of aspects of the curriculum that might have previously not been as obvious.

- At the University of South Australia, the Bachelor of Laws TLOs have been incorporated into a joint Engineering, Nursing and Law Teaching and Learning project that seeks to articulate graduate qualities. The work involves using e-portfolios and e-portfolio pedagogy to scaffold and track graduate quality development. The TLOs have been aligned with UniSA graduate qualities so that students can see the connection between the two in tracking the development of their professional attributes.

- At The University of Queensland, awareness of the TLOs has begun to inform teaching policy and the design of new courses. An example of the former is an increased emphasis upon documenting quality assurance processes within the school, knowing that at some point in the future the school will be required to provide evidence supporting its claims about teaching quality. An example of the latter is the decision to make group work a major component of the assessment program for a capstone course as a direct result of the TLO requiring evidence of collaboration.

- Leaders of a Forum of Soil Scientists (September, 2010) requested outcomes specific to Soil Science. The Engineering and ICT TLOs were slightly modified and discussed. The resulting document will now be presented to the gathering of the teaching academics from the consortium (Sydney (lead), Melbourne, Adelaide, UQ, UWA) at Forum 3 (April 2011) for further discussion and likely adoption.

- Discipline Scholar, Professor Ian Cameron, was invited by the director of Mining Education Australia (MEA), to their bi-annual meeting in 2010 to speak on the latest developments of graduate attributes and learning outcomes. The Engineering and ICT TLOs were presented as a basis for the MEA’s curriculum review. The five learning outcome areas were very well received and perceived as much more usable than the current graduate attribute statement. Attendees considered their curriculum streams against the five areas, understanding the emphasis in their stream courses against the TLOs. Members would consider adapting these five TLOs when their ultimate alignment with the revised Stage 1 Competency Standards being approved by Engineers Australia is known. Attendees were also particularly interested in assessment and measurement of attainment against outcomes. It is likely that the MEA will adopt the statements and modify as necessary for their curriculum purposes.
Uptake of LTAS project outcomes by the wider discipline community

There is evidence that the uptake of the LTAS project’s outcomes extends beyond Australian institutions and of its influence in the broader discipline communities (both nationally and internationally). For example:

- The Geography and History Standards Statements have been used to inform and shape TLOs for Geography and History graduates in Syria. As part of recent (November 2010) EU-funded consulting work to upgrade the higher education sector in Syria, an Australian geographer drew from (with appropriate acknowledgement) the Australian Statements in her work.

- The Bachelor of Laws TLOs have been used as the framework for a new first-year student text. The text contains six chapters largely or entirely aligned with the TLOs.

- The entire Australasian Law Teachers Association’s 2011 Annual Conference http://www.alta2011.com/ will focus on assuring professional and academic standards for Law. Discipline Scholar Professor Sally Kift is delivering a keynote speech. She has also been invited to present at the Australasian Professional Legal Education Council’s 2011 Annual Conference.

- In November 2011, the Macquarie Centre for Legal Governance is hosting a Summit on ‘The future of legal professionalism, education, ethics and scholarship’. Involving peak legal organisations such as the Australian Academy of Law, the Rule of Law Institute Australia, the Law Council of Australia, and the Judicial Conference of Australia, the Summit will consider how legal education, scholarship, ethics and professional responsibility might be redesigned. The discussion will include the work of the LTAS project in Law as part of its review of the changing context.

- The Geography Standards Statement proved to be a valuable resource to the President of the Institute of Australian Geographers (IAG) – also the Discipline Scholar for ASSH – in preparing material for a new global reference ‘advertising’ the benefits of studying Geography in Australia.

The request for a 1,000-1,500 word submission for this publication came from the editor of i-studentadvisor magazine. The i-studentgroup (http://www.i-studentgroup.com/) currently produces a series of online magazines throughout the year that are distributed free to nearly 10,000 guidance counsellors, heads of sixth form (Year 11), IB coordinators and so on around the world. With access to 250,000 students, the magazines detail study options in various countries and focus on different subject areas. For 2010–11 a hardcopy subject guide is under preparation. It will have a print run of 10,000 copies and will be distributed to all i-studentadvisor counsellor subscribers, important education figures and attendees at international conventions.

As the editor noted, “This is a great opportunity to really promote the subject and country to thousands of readers around the world who we hope will use the guide as a first port of reference when considering their study options. We know from feedback from our subscribers that this kind of book would be of great use to both themselves and their students”.

Development of resources and processes to support the development of TLOs

A growing number of disciplines outside of the scope of this demonstration project have sought to become involved in the LTAS project. In particular, they have expressed interest in developing TLOs in their discipline and have sought support from the ALTC to conduct this undertaking in the form of advice on the processes associated with the development of discipline-based TLOs. In response, a discipline Partner Pack was devised, which provides a suite of documents and templates developed by the ALTC in the LTAS project. These documents have been distributed to a number of partners to date (or downloaded from the ALTC website), with a positive response from users. An updated copy of the Partner Pack will be available on the website in early 2011.

Identification of resources and development of search interface (the ALTC Resource Library)

As part of the heightened emphasis on outcomes-based quality assurance, it is envisaged that various stakeholder groups will need to be supported in their standards setting/regulation obligations, eg the assessment of academic standards, by having access to a variety of standards-related resources to use as reference points, examples, and so forth.

The ALTC Resource Library has been established, informed by the results of a preliminary scoping study of relevant national and international learning and teaching repositories, eg EvidenceNet, Merlot, ERIC, to identify best practice design methodology, web interface design, and search functionality structure.

The initial phase of the project focused on work commissioned by the ALTC. Resources were selected and identified by a review panel and peer-evaluated by selected members of the academic community who provided overview commentary speaking to the value of the work to the community in general and to disciplines specifically. Suggested keywords were provided through the evaluation process along with a ranking of the resource. This information supported the generation of web page metadata, the creation of a dynamic search facility and the position the evaluated resource occupies on a search results list. Two pilot evaluations were trialled to refine the process.

The search facility provides an overview of search structure including nomenclature and tips on searching, as well as an
advanced search capacity. The site also contains a portal with links to international good practice websites as well as other useful sites.

The repository, the Resource Library, is online and is accessible for reference by TEQSA, Australian higher education institutions, and other interested organisations through the identified hyperlink on the ALTC home page.

Procedures and workflows have been established to support the ongoing identification of ALTC projects focused on best practice in curriculum and academic standards. This process now forms part of the normal ALTC grants and projects administration workflow. Automated review flags have been built into the workflow to ensure currency of the resources identified as good practice.

High levels of involvement/engagement by discipline communities in the quality assurance/standards setting agenda

Providing the opportunity for members of all stakeholder groups to become involved in the LTAS project was an important component of project design. Based on the tabulation of LTAS project consultation records, disciplinary engagement has been extremely high. In total, members of the LTAS team have:

- hosted over 420 meetings/presentations/workshops to more than 6100 attendees
- received feedback (written and survey responses) from over 600 individuals and groups on the draft TLOs
- received in-kind support with venue hire, catering etc for many events and the dissemination of material/updates to stakeholder groups, and
- observed high levels of attendance and discussion at reference/advisory group meetings and other organised events, eg LTAS Forum, AuQF Keynote presentation and workshop, Panel Sessions at ALTC Assessment Forum and ATN Assessment Conference.

Interest in the LTAS project was also high with:

- 8388 visits to the Standards section of the ALTC website to the end of 2010
- 669 individuals subscribing to the official newsletter, Disciplines Setting Standards
- over 2960 individuals on Discipline Group contact lists
- over 100 invitations for Project Director, Emeritus Professor Christine Ewan and ALTC CEO, Dr Carol Nicoll to attend meetings/make presentations on the LTAS project, and
- considerable media coverage.

Heightened national and international awareness of Government reform agenda, establishment of TEQSA, and outcomes-based quality assurance

A direct result of the high levels of interest and engagement in the LTAS project has been the heightened awareness of the Government's reform agenda and its components, most notably TEQSA and its proposed outcomes focused quality assurance arrangements. This awareness raising has not only occurred within Australia – where it has been substantial – but also internationally through:

- presentations made at international conferences throughout 2010
- a number of reference/advisory groups having international membership
- the establishment of close ties with the European Tuning Project's coordinators and scholars, and
- hosting of visiting international delegations.

Facilitation of discussions within and between academia, employer groups, professional associations and accreditation bodies on core learning outcomes

Another important outcome arising from the high levels of involvement in the LTAS project is the number of successful discussions facilitated among stakeholder groups. In all instances, the developed TLOs derived from the need to acknowledge and integrate different perspectives existing within disciplinary communities regarding the expectations for graduates. This involved the ‘bringing together’ of various stakeholder groups to share perspectives and search for commonalities in what it means to be a graduate of that particular discipline. The result has been the identification of the learning outcomes central to the discipline. As noted by the Business, Management, and Economics Discipline Group:

The Learning and Teaching Academics Standards (LTAS) project has been a catalyst to reverse deteriorating relationships and facilitate collaboration through a cooperative exercise. A ‘collaborative’ ethos has been steadily emerging between professional bodies, employers and academics throughout the year and there is evidence that there is optimism about this continuing into the future (through further collaboration).
This successful facilitation of various stakeholder groups also allowed for some parties to ‘have a voice’ in the development of standards in their discipline. As noted by one discipline group in their report:

At consultation sessions, several stakeholders from ‘outside’ the academy, eg community organisations, employers, noted their appreciation of being invited to and being able to, contribute in meaningful ways to the definition of the discipline, the outline of career opportunities, and the specification of TLOs. They observed that it was the emphasis on educational outcomes, rather than educational processes, that opened up this opportunity for them.

The Health, Medicine and Veterinary Science Discipline Group also noted their successful facilitation as an achievement:

Interdisciplinary dialogue has been fostered. At meetings and workshops representatives from different institutions and health care disciplines have come together to focus on commonalities in health care education.

So too did the Law Discipline Group, who suggested that:

The TLOs contribute to a shared vocabulary and agenda for curriculum reform that might make it easier for law schools to share ideas both with each other and with other disciplines.

Stakeholder facilitation, and the positive outcomes deriving from it were also noted by the Engineering and ICT Discipline Group with the following ‘collateral’ achievement outcomes listed:

- provision of opportunity for the multiple and diverse voices of all stakeholders to talk together about the value and impact of developing robust learning outcomes
- recognition that the sub-disciplines are mutually integrated in the undergraduate learning experience
- beginning a national dialogue concerning threshold standards including what is acceptable and, by default, what is not acceptable.

In their final reporting template, Engineering and ICT Discipline Group also noted:

The Discipline Scholars acknowledge the collaborative goodwill between the five professional organisations in developing the TLOs. While these bodies have recognised for some time the importance of making transparent discipline-specific learning outcomes, there is increasing awareness of the expectation that learning outcomes also need to be: interpretable; actionable and assessable by academe; robust for transition to industry; mindful that most endeavours are interdisciplinary; broad enough to allow for diverse contexts; specific enough to offer clear direction; and easily communicable to all stakeholders.

Development/synthesis of reference points for national and international benchmarking

In each of the LTAS project’s demonstration disciplines, new or improved sets of academic reference points have been developed. In the Arts, Social Sciences and Humanities and Creative and Performing Arts Discipline Groups, the developed TLOs are the first national statements conceived for History, Geography and the Creative and Performing Arts. As such, they provide these discipline communities with much needed national reference points for benchmarking purposes. Further, as these learning outcomes are the core of the discipline and have been mapped to those existing overseas, eg Tuning, QAA, international benchmarking can arise from these reference points. This also applies to the other disciplines participating in the LTAS project, eg Accounting, Engineering and ICT, Health, where international benchmarking can more readily occur from the mapping of the TLOs to other international standards. Indeed, in those disciplines starting with established national reference points, this project has allowed for the synthesis of reference points to core, comprehensible, sets. This is in contrast to the long lists of competency statements that were the usual, and difficult to manage, benchmarking sources.

The explicit expression of implicit and localised practices

None of the LTAS project’s demonstration disciplines began at a zero-base in their development of TLOs. Each had a number of sources to draw upon, including international reference points and various national competency/accreditation statements. Sources also resided in individual institutions where many had adapted their graduate attribute statements to the disciplinary level. They also resided in individual schools/departments where subject outlines and conversations with academics gave indications of learning outcome expectations. Most of these sources, however, were implicit and localised. The major outcome to note is that this project has made the localised and implicit explicit at the national level. Through the intensively consultative process undertaken, members of stakeholder groups were given the opportunity to share their assumptions with others and to have them discussed and debated at a national level. They were also able to share and provide feedback on local practices and underlying frameworks existing within the sector.
Disciplinary modernisation

By developing TLOs, the LTAS project provided the opportunity to undertake an in-depth examination of the demonstration disciplines. In some instances, this examination had not occurred for more than a decade. In others, it had never taken place before. This unique opportunity was embraced by the discipline communities and used as a way to devise TLOs reflective of the:

- current requirements of graduates, eg self-management
- global trends, eg ethics, sustainability, and
- anticipated needs, eg lifelong learning.

The result has not only been the development of contemporary and forward-thinking TLOs, but engagement in the task of a ‘disciplinary stocktake’. This task was wholeheartedly embraced by the discipline communities, with most feedback related to the requirements of graduates for today and tomorrow, and the need to align curricula to address these demands. Indeed, most of the discussions taking place in 2010 concerned the need to modernise curricula and to identify the central components in any such reform.

In-depth disciplinary and institutional consideration of the implications for curriculum and assessment

Central to the design of the LTAS project were the ever-widening rounds of consultation with stakeholder groups. The first two rounds were primarily geared towards awareness-raising and the seeking of feedback on draft TLOs respectively. The final round was the dissemination of the developed TLOs, which allowed stakeholder groups to consider the implications of the developed TLOs in relation to curriculum design/reform, assessment and accreditation. Through institutional visits and presentations at national events, Discipline Scholars have provided the opportunity for discussion and in-depth consideration of the next steps. The result has been the development of a shared understanding of future requirements, eg the need to provide evidence of TLOs attainment by students. It has also stimulated discussions on the appropriate ways to design curriculum aligned with these requirements, what to assess, and when. These discussions are ongoing but have, most importantly, begun.

Foundations laid for sector-wide reform

Collectively, the outcomes presented and described above have laid some of the foundations necessary for the Government’s proposed reform agenda, particularly those related to the “new era of quality in tertiary education”. Specifically, this project has laid the foundations for:

- whole-of-program curriculum review and reform based on a national understanding of the core attributes required of a graduate in the discipline
- strengthened learning culture within the higher education sector
- integrated quality assurance arrangements satisfying multiple stakeholder groups including: academia, employer groups, professional associations and accreditation bodies
- holistic assessment practices suitable for assessing the full range of defined capabilities
- assuring confidence in the quality assurance arrangements employed
- cultural change characterised by optimism and collaboration
- comprehensive national benchmarking arrangements involving public and private providers and the ongoing engagement of international experts in discipline-based learning outcome definition, and
- a place for Australia in the global outcomes-based graduate mobility agenda with Tuning Europe, USA, Canada, Latin America, Lithuania, Russia, Africa, Asia and the Middle East.

Other achievements

The foregoing is a synthesis of the many achievements of the LTAS project into a smaller number of outcomes and impacts that appeared common across the discipline groups. Each discipline group forwarded many other achievements, which should be noted. These included:

- the first ever comprehensive inventory of the number and type of health care disciplines with bachelor level (or higher) professional entry-level qualifications in Australia
- a comprehensive list of professional/registration/accreditation/educational bodies associated with health disciplines was created. No pre-existing listing could be found prior to this project commencing.
- linkages between Health Workforce Australia (HWA) and the Australian Learning and Teaching Council (ALTC) have been fostered in an area of considerable overlap: competency standards
- the opportunity has arisen from this project to create greater alignment between academic quality assurance and professional accreditation processes
- growing recognition of the importance of developing robust methods of identifying evidence that a graduate has achieved threshold against the TLOs
• willingness on the part of members of the discipline to continue to build and share resources to progress evidence of outcomes
• evidence that the TLOs are intended to be used in academic communities to assist in the vertical and horizontal mapping of learning outcomes subjects and programs
• two texts on legal education have been commissioned that are either organised around or will draw on the TLOs
• Discipline Scholar, Associate Professor Mark Freeman, has been invited to publish on his experience in Accounting Education: An International Journal with Accounting Learning Outcomes Working Party Chair, Professor Phil Hancock
• an online survey was launched seeking responses from academics, graduates, employers and professionals to a set of questions about whether Creative and Performing Arts learning outcomes were thought to be appropriate for bachelor and coursework masters degrees and the extent to which respondents perceived that the learning outcome expectations were being achieved in degree programs in Australia. A total of 252 respondents completed this first-ever survey
• a contact list of breadth and depth has been developed (n = 649). This included representatives from 38 Australian universities, 21 private and other providers, and 20 other key stakeholders including professional bodies and peak bodies. The contact list can be a springboard to sustaining engagement in post-2010 implementation projects
• the Creative and Performing Arts TLO statements have been used as a template and modified for at least one other discipline – Journalism.
3. Lessons learned

As well as facilitating and coordinating the development of academic standards, the LTAS project was also designed to explore the feasibility and sustainability of the process.

Reflections on the lessons learned were captured in a final report where discipline groups (and ALTC staff) were asked to identify or make comment on the following areas:

1. critical factors leading to the success of this project
2. impeding factors
3. key advice from Discipline Scholars
4. key advice from project officers, and
5. recommendations for the next steps.

Together, the reflections in these categories (outlined in more detail below) provide a comprehensive blueprint for the further development of discipline-specific academic standards. It is a rich collection of ‘lessons learned’, many of which have been used to inform parts of the sustainable model outlined in Section 4. Providing support to discipline groups in their standard-setting work is a central feature of this blueprint. Other critical features include:

• the policy stimulus to engage in standards setting for quality improvement as well as quality assurance
• clear and sincere commitment to discipline groups being responsible for setting their standards
• senior discipline leader buy-in to reinforce the ownership of the standards-setting process
• clear parameters in which to set standards, eg four-six outcomes
• focus on outcomes first, allowing them to lead into other core issues such as assessment
• multi-stakeholder involvement including private providers, accrediting agencies, professional bodies, employers and recent graduates
• recurrent engagement with the discipline community at all levels
• consideration of international benchmarks
• a transparent and inclusive consultation process
• respect for expertise residing at the discipline level, and
• explicit use of existing networks.

3.1 Critical factors leading to the success of this project

The LTAS team identified a number of factors leading to the success of the project. Of these, the most commonly noted were the:

• context
• reference/advisory groups
• academic community
• stakeholder groups
• central support
• focus of the project
• Discipline Scholar interaction and within-group support
• project officers, and
• Discipline Scholars.

A summary of each success factor is given following.
Context

Most discipline groups cited the context in which this project operated as critical to its success. The most commonly mentioned context-related factor was the Australian Government's commitment to a discipline-based approach to academic standards development. This laid the foundations: as one discipline group noted, “the disciplinary focus was attractive to the ‘academic tribe’ culture existing within higher education”. Another discipline group noted that the “explicit statement by federal government that the standards were to be defined by discipline communities – rather than being imposed from ‘outside’ – and acceptance by discipline communities of that claim” was a critical success factor.

A number of other context-related factors were identified, including:

- the recognised need for change in most discipline groups
- the concurrent reform process occurring within various discipline groups
- unmet employer expectations of graduates, and
- international trends in discipline-based standards development.

Indeed, the first point on this list – the recognised need for change in most discipline groups – was a particularly strong contextual factor. While the Government's commitment to disciplines setting standards was the initial stimulus for this project, it was also used as a ‘means to other ends’, with most discipline groups using this stimulus to address other issues within their disciplines. For some, it was the need to address the multiple (and often compelling) demands placed by accrediting bodies and their associated administrative burden. The input rather than outcomes focus of some accrediting bodies was also seen as a problematic area. For others, it was the need to address aspects of the discipline, such as research and team-working skills that were perceived to be neglected.

Although important, the Government's policy stimulus was not the only factor in the success of the project. Disciplines did not undertake the project merely to satisfy emerging compliance obligations, ie to be used by TEQSA. It became an organisational development exercise at the disciplinary level, with an opportunity to address other problematic and interrelated issues. The Government's policy empowered disciplines to set their own standards, and encouraged them to take responsibility for the quality of graduates as a discipline rather than as a loose collective of academic departments. The opportunity was embraced by the participating discipline communities.

Reference/advisory groups

All discipline groups cited their reference/advisory groups as a critical factor in their success. Their support and advocacy functions were mentioned, most notably, the active role members took in providing feedback on draft TLOs and accompanying documentation. The ability to link into the members' existing disciplinary networks was also highlighted. As one discipline group stated "we then had access not just to the executive boards of those bodies [of which the members were representatives], but also to their very extensive memberships. This allowed us to set up a network of contacts very early on in the project that was constantly called upon as the project unfolded". The ability of the scholars to use disciplinary networks was a critical success factor. From their standing in their discipline communities, all scholars already had extensive networks on which to draw. However, their networks increased dramatically when added to those of the ALTC and reference/advisory group members.

Academic community

The support of the academic communities associated with LTAS project's demonstration disciplines was also noted as a critical success factor. The willingness of these communities to engage in the project enabled the scholars to receive feedback representative of the broad academic community, including private providers. This support also enabled the developed TLOs to be owned by the discipline communities. As suggested by one discipline group: “The immense and demonstrated goodwill, engagement, and genuine concern for the development of higher education in Australia was one of the single most rewarding aspects of this project. It meant that feedback was freely given, constructive and often very perceptive. The sector will ‘own’ these threshold learning outcome statements in a real sense”.

Stakeholder groups

Closely related to the above, another critical factor recognised by many discipline groups was the support offered from peak stakeholder bodies. These bodies include councils of deans, associate deans networks, accrediting and admitting authorities, and professional associations. These, and many other bodies, assisted in the dissemination of information on the LTAS project to their members, eg newsletters forwarded to members, information hosted on their websites. They also circulated ‘calls for comment’ and encouraged their members to provide feedback to scholars on draft versions of the TLOs. This in-kind support by various stakeholder groups was viewed as crucial by many discipline groups and was often driven by the support of the body’s leaders, eg their executive officers, chairs and presidents.
Central support

The central support offered by the ALTC was also cited as a critical factor. As one discipline group stated, “Without [the] ALTC’s strong reputation as an honest broker with an existing reputation for long-term inclusive strategic change, engagement would have been lower”. Apart from the broker role, a number of other ALTC central support functions were mentioned, including:

- leadership offered by the CEO and Project Director
- resourcing (appropriate funding, in-kind support)
- the LTAS February Forum
- communications, and
- advice from the ALTC’s international contacts.

Closely managed project focus

Related to the central ALTC role, the scope of the LTAS project was also considered crucial to its success. The project’s “tight focus” on “one degree in one discipline” was noted as a critical factor by one discipline group. So too was the sustained single agenda of standards and the focus on a small set of TLOs. As noted by one discipline group:

> The decision to go with a limited number of learning outcome statements at the threshold level proved to be prescient. Although it was an extremely difficult task to develop learning outcome statements of such economy, it made the project manageable, the process understandable, the national implementation possible, and the outcomes assessable.

Discipline Scholar interaction and within-group support

A critical success factor noted by many discipline groups was the other Discipline Scholars involved on the LTAS project. The “collegial good spirit from a group of gifted Discipline Scholars” was noted by one discipline group as a critical success factor. “Regular DS [Discipline Scholar] meetings and correspondence helped the DS share ideas, support the common project direction” suggested another discipline group. Another made the following comment on the team of Discipline Scholars:

> This group was absolutely vital to the success of my project on numerous levels. At various times in the year individual scholars provided invaluable advice on the draft threshold learning outcomes; they were also extremely important sources of bibliographical information, academic wisdom and institutional knowledge. The collegial nature of this whole project was central to its success.

The appointment of a cohort of Discipline Scholars was an extremely successful strategy at this ground-breaking stage in the process. Not only did they support each other in their standards-setting task (as noted above), but they also operated as a synergistic collective, with the whole often delivering more than the sum of its parts. On many occasions, for example, scholars banded together to make presentations, knowing that the outcomes of each could not be viewed in isolation. They also contributed to a common communication source (the Discipline Setting Standards newsletter), where their individual outputs could be viewed as part of a broader enterprise with a common aim.

Project officers

The support offered by the project officers was often cited as a critical factor by Discipline Scholars and ALTC staff. These officers provided a wide range of support to their Discipline Scholars, and were described as the ‘engine room’ by one officer. While the financial/administrative support was crucial to the success of the project, their scholarly contributions were highly valued and appreciated by the Discipline Scholars and ALTC staff. Most officers had extensive experience in educational/curriculum design and played a crucial role in the development of their group’s TLOs by leveraging off this experience.

Discipline Scholars

The final factor critical to the success of the LTAS project was the Discipline Scholars appointed by the ALTC to facilitate the development of academic standards. Presenting at the Australian Quality Forum this year, LTAS Project Director, Professor Christine Ewan, described the appointed scholars as “incredibly dedicated, experienced, and extremely patient”. One scholar described his Discipline Scholar colleagues as “rooted and respected in their discipline; known by ALTC as being able to deliver; able and supported to act as change agents”.

In short, the appointed Discipline Scholars were given the responsibility to lead the facilitation of standards within their discipline communities, and have successfully done so.
3.2 Impending factors

The success of the LTAS project was not without challenges. The impeding factors reported by the discipline groups were, for the most part, unique to the discipline, such as:

- the absence of a Creative and Performing Arts Dean’s Council, and a network of associate deans of learning and teaching
- the scale of stakeholder engagement required in the Health, Medicine, and Veterinary Science Discipline Group and the absence of a pre-existing list of ‘Healthcare’ disciplines or qualifications to guide initial consultation planning
- the large numbers of students studying Accounting and the problems associated with an increasingly large number of casual academics required to meet the demand, and
- the time needed for some stakeholder groups to respond to requests for feedback.

There were, however, two common factors identified:

(a) the uncertainty regarding TEQSA and the potential ‘use’ of the developed standards, and
(b) the Australian Qualifications Framework (AQF).

Uncertainty

With reference to uncertainty with TEQSA and the use of the TLOs, comments such as the following were noted:

The major impediment to the project was the lack of a proper framework – TEQSA – because everything had to be cast into the conditional when discussions about implementation were in progress.

Lack of surety regarding possible forthcoming implications [was an impeding factor].

Academics have indicated their unease that the sector is establishing TLOs without knowing how compliance will be assessed or what the penalties for non-compliance might be.

The lack of clarity about the new quality agency, ie TEQSA, and its role in the future [was an impeding factor]. This was exacerbated by poor reporting in the media over the year and the stances taken by some prominent stakeholder groups.

Uncertainty about the ways in which the standards might be used for quality assurance purposes [was an impeding factor]. This may have reduced the level of urgency stakeholders felt for the project. More significantly, it made some organisations … unwilling to completely endorse the Standards Statements.

However, it is important to note that this uncertainty did, according to one discipline group, offer the benefit of “encouraging stakeholders to focus on the integrity of the standards themselves and their role in quality improvement rather than on their ‘political’ and regulatory implications”.

Australian Qualifications Framework (AQF)

With reference to the AQF, comments such as the following were noted:

The LTAS project has taken place in the shadow of sectoral concern about the apparent inflexibility and prescriptiveness of the AQF.

Lack of perceived consultation and relevance for AQF changes [was an impeding factor].

Fluidity in the AQF, with which the standards were intended to be aligned [was an impeding factor]. Over the course of the LTAS project three different consultation versions of the AQF were circulated nationally: September 2009; July 2010; and September 2010.

3.3 Key advice from Discipline Scholars

In their final reporting template, Discipline Scholars were asked: “Based on your experiences this year, what three-five most important pieces of advice would you give to a discipline group embarking on the development of TLOs in their discipline?” Their responses to this question were impressive, with a considerable amount of advice offered. In summary, Discipline Scholars stressed the importance of:

- engaging with all stakeholder groups
- using the expertise existing within the academic community and stakeholder groups
- securing the early endorsement of developed TLOs
- ensuring the support of leaders within the academic community, and
- drawing on existing national and international learning outcome statements.
Most scholars, however, were quite specific in aspects of their advice relating to each discipline. This advice arose from the specific direction taken by each discipline group and their experiences associated with this decision, particularly those aspects that worked well. Consequently, the key advice given by the Discipline Scholars is summarised below for each discipline group. The diverse styles of expression in this advice reflects the diverse styles of the disciplines and Discipline Scholars, a strength of the project.

Notwithstanding this specificity of advice, many of the statements are broadly applicable to any discipline.

**Arts, Social Sciences and Humanities Discipline Group**

- Establish a reference/advisory group comprising responsive, co-operative, intellectually-gifted, disciplinary-networked, forthright, and articulate members. Related to this, any working group responsible for preparing initial draft of TLOs needs to be credible to the broad cross-section of the discipline.

- Ensure that there is abundant opportunity for stakeholders to comment on the standards as they are developed and to shape the process by which the standards are being reached.

- Ensure that the standards development process is ‘disconnected’ publicly from any specific/single individual or organisation. The standards need to be understood to be those of the ‘discipline’, not something created by the ALTC, by ‘Professor Bloggs’, or by the ‘Australian Society for XYZ’.

- There is probably value in developing TLOs for more than one degree level at a time. For instance, working simultaneously on bachelor and honours level qualifications encourages clarity about specific levels of attainment within each of those awards.

- Put a deadline on the process of determining standards which could otherwise end in a never-ending process of consultation and revision. Having said this, let stakeholders know that future revisions are possible after the standards have been in effect for some ‘trial’ period, so they do not feel they are committing themselves or their organisation indefinitely.

**Business, Management and Economics Discipline Group**

- Develop a clear persuasive argument, ie significant follow-on consequences, to get a fertile context for engagement and action:
  - ‘disciplinary tribes’ need to be engaged – not just those with a teaching and learning bent and enthusiasm
  - participants must believe the successful project outcomes are crucial for them to be engaged
  - it was useful to have a deadline (from Business, Management and Economics [BME] advisory group at February 11 leaders Forum) to drive outcomes, including the need to be pragmatic at times
  - it was very useful to have authoritative source documents:
    a) UK QAA accounting benchmark statement for bachelor degrees was useful in developing the ‘Nature and extent of Accounting’
    b) the five Dublin Descriptors were very useful to identify the main categories of TLOs at the beginning
    c) the revised AQF draft descriptors and the clear role they will have in TEQSA’s process of quality assurance were crucial to refinement during the process of development. They also provided a strong rationale for the standard expected and facilitated a reference point for alignment to a higher standard for masters (entry) degrees over bachelors degrees.
    d) 2008 Tuning surveys of generic and subject competencies helped to identify the areas to focus upon, regarding TLOs
    e) a key driver of success in implementation will be if TEQSA demonstrates commitment to its importance by funding the relevant peer review team to undertake assessment of the process. The lack of funding in the UK for this was repeatedly raised by those who had previously worked in the UK as a reason for the benchmark statements failing in the implementation process.

- Identify key leaders and key action roles for them to engage in and thus achieve support and commitment:
  - Australian Business Deans Council (ABDC) through its President, was the BME leadership group driving the leaders’ forum, the process re selection of drafting and advisory groups, promotion of national consultation processes, access to website for online surveys on drafts, reviewing endorsing drafts. This gave credibility and transparency to activities and empowered the community engagement.
  - ABDC Associate Deans’ Teaching and Learning, meant the ‘coal-face’ implementation group involved those who are already committed to and experienced in research via ALTC projects, provided further support to Discipline Scholars and promoted engagement in the project. Members of this group are also involved in the Discipline Scholars research on change processes.
- useful to have key stakeholders represented in February leaders forum and then advisory groups as they promoted the national consultation and the professional bodies in particular were active in promoting engagement post-meeting
- useful to have DEEWR (and AQF) active in BME advisory group – opened doors to engagement post-meeting and ensured a level of transparency to DEEWR about project progress.

- Ensure the most active key collaborating leader(s) and the key working party are not just trusted and engaged but are very responsive and feel supported and resourced by project leader. Sometimes this means being flexible and pragmatic. Trust building is crucial to sustainability.
  - Without very engaged and responsive working party chair and advisory group chair, the project would have failed. If someone is engaged with cynical motives, eg merely CV building and distracted elsewhere, this project would have failed. If they are inefficient then it would have also failed.
  - It was crucial that the DS was extremely active and responsive both to them, actively anticipating their needs, eg drafting documents, offering advice, and regularly promoting them to others.
  - Trust-building amongst the working group members was crucial. The group met face-to-face for two days at the beginning and this included meals to spend time relaxing and building trust. Thus, when later teleconferences occurred there were personal relationships and commitments to draw on.
  - Working party members accompanied the DS to almost every one of the consultation workshops.
  - Because accounting was not the discipline area of the DS he could play a more facilitative role and not chair any drafting or advisory groups. This provided greater objectivity in the role. It also meant the ability to call on the ABDC President, Chair of the Accounting Expert Advisory Group (AEAG), to provide independent feedback during the development of Draft 1 – this made the resulting TLOs much tighter.
  - Trust is built by being inclusive. Efforts were made to include all stakeholders in the consultation process from all provider and employer types as well as students. The working party was intentionally formed to have a balance of perspectives and experiences. Intentional efforts were made to review the impact of drafted statements “in the shoes of X”.
  - ‘Be pragmatic and do something’. Disciplines have different starting points, eg Engineering has been working on their outcomes closely with the profession for over a decade. Recognising the context allows for success to be possible, which is likely to breed further success. It is ‘ok’ to take a long-term perspective and allow a decade to refine the process to something that is ‘tight’. It is better to do that, than come up with something that fits some stakeholders but does not actively involve others.

- Plan and execute multiple, successive and ever-widening iterations of engagement across the nation (and at multiple sites in each state and in multiple modes) to ensure active engagement and dissemination of the agenda and commitment to follow-on at multiple levels (from deans to lecturers).
  - The ongoing support of ABDC Associate Deans’ Teaching and Learning Network who were already committed to and experienced with a change agenda was valuable. They felt their contributions were valued and that they were being supported. This meant the national consultation cycle of engagement was broad and engaged a range of academics within a short time frame. Invitations for the DS to present at their respective universities after the initial consultative forum have resulted in ongoing engagement in the project and will foster sustainability for future disciplines.
  - The national consultation briefings fostered engagement in the process and the desire to take ownership of the agenda.
  - Following up contacts provided by private providers with face-to-face meetings and encouraging state-based hosts to promote briefings to all sectors deepened the engagement of this sector.
  - Communication strategy focused the ‘community of practice’ and they were alerted to the progress of the agenda and deadlines for feedback.
  - Expanding the contact list at every opportunity and engaging with those listed via regular e-Updates keeps the project front-of-mind.
  - Supplementing face-to-face cycles with electronic opportunities for engagement is crucial to ensure everyone has multiple opportunities to have a say. This includes email listserv updates, online surveys and online discussion forums, hosted by multiple people, eg ALTC Exchange, the DS, academic association, professional bodies.
  - Teleconferences of the Accounting Learning Outcomes Working Party were a good way to progress the drafting process. They allowed for good working relationships and facilitated speedy responses to drafting process. The presence of working party members at state presentations lent credibility to the process and meant participants felt they were hearing ‘from the source’ and gave credibility to the revision process.

- Structuring active reflection improves outcomes
  - The DS actively sought evaluative data from working party members and participants at briefings to assist in understanding the key issues that would be refined via online survey.
  - The drafting party regularly took time out to reflect. This allowed them to develop a set of guiding principles that would assist future disciplines (as well as keep a transparent record of what occurred.
  - The role of advisory body. Careful consideration of representation to engage all stakeholders and enlisting personnel with credibility who met the Terms of Reference and had a profile to gain credibility in the business community.
Creative and Performing Arts Discipline Group

- Make good use of the expertise at your own institution
  - The University of Tasmania Centre for the Advancement of Learning and Teaching was an extraordinarily valuable and generous source of advice and criticism; and fellow academics teaching at the coal face are often one’s most perceptive critics.

- Establish the extent of the discipline community as a first principle and figure out the most effective ways in which to target individuals and groups
  - Key players in the academic sector are the deans and associate deans but do not underestimate the importance of program and course coordinators and academics working at the coal face.
  - Keynote addresses at national discipline-specific conferences are important in order to alert the academic community to what the ALTC is trying to achieve – this was done very effectively, not just by the Discipline Scholars but by the Project Director and CEO of the ALTC.

- Getting early endorsement of the draft learning outcome statements from the Discipline Reference Group and ‘in principle’ endorsement from the peak bodies meant that, in the subsequent round of workshops around the country, the TLOs were already carrying considerable weight.
  - Where possible, take time to run workshops that engage with program and course coordinators. They are the ones who will be intimately involved in the mapping of the TLOs into their degrees.

- Student and graduate engagement with the project was quite difficult to achieve. This is the reason why we incorporated an online survey of graduates, academics, practitioners and employers. The 252 respondents gave us very valuable feedback. Devise strategies for engaging these important informants.

Engineering and ICT Discipline Group

- Engage the hearts and minds of the leaders of the profession.
- Be prepared for many repetitive conversations.
- Have participants focus on the tasks that young graduates are required to do. Infer the capabilities from those.
- Engage the whole community – students, graduates, academics, professionals.
- Advertise early regarding meetings. It is difficult to get busy people there.
- Establish good engagement with a wide group of stakeholders (academics, professionals, recent graduates and current students).
- Do not get hijacked in the knowledge and content debates which are largely a diversion.
- Research carefully and thoroughly the existing literature and professional practice around learning outcomes.

Health, Medicine and Veterinary Sciences Discipline Group

- It is imperative to secure high-level endorsement at all stages of the project together with clearly identified project champions.
- Keep threshold learning outcomes simple.
- Anchor the threshold learning outcomes to existing standards/agreed reference points.
- Keep your stakeholders informed at all stages of the project.

Law Discipline Group

- Early support of peak academic and professional bodies is crucial. In some cases, it can be difficult to identify and engage with all relevant stakeholders. The early support of peak bodies in this process is critical.
- You may have to build your own supportive networks among academics:
  - Discipline Scholars may have to build capacity at the level that they consider to be most useful.
  - Some of the LTAS projects will not align neatly with sectoral networks which are either at too general or too senior a level. For example, in Law, the impact of the TLOs will be keenly felt by Associate Deans (Learning and Teaching). They can be powerful allies. Not only did they not already meet as a network, but at the start of the Law Project it was difficult for someone outside a particular law school to identify who performed this role.
- Draw on existing international and national precedents and expertise:
  - The various national professional standards and the Tuning and QAA projects offer a series of precedents that can be used to help craft the TLOs. Colleagues who have been involved in those endeavours may be able to provide advice about appropriate processes and bear-traps. We included colleagues from the United States, the United Kingdom and New Zealand in our Expert Advisory and Disciplinary Reference Groups.
• Be careful about ‘mission creep’ but be open to opportunities:
  – Early on, Discipline Scholars need to select the disciplines and degrees that will form the focus of their work.
  – Discipline Scholars need to justify their selection and should have the support of the peak organisations in their sector.
  – The mission needs to be achievable, worthwhile and legitimate.
  – Unexpected opportunities to engage with new organisations or to extend the mission in particular directions may emerge and these should be assessed on a case-by-case basis, sometimes in consultation with advisory groups, the ALTC and peak bodies.

• Be prepared for a significant amount of time on the road. Interstate commitments may expand well beyond your initial estimation. For example, we initially planned five sessions in five states as part of a national strategy for local consultations. This eventually expanded to 23 and included all states and territories. In addition, following these consultations, we were asked to address various meetings of state-based organisations.

3.4 Key advice from project officers

In their final reporting template, project officers were asked: “Based on your experiences this year, what three-five most important pieces of advice would you give to a project officer appointed to assist/support a discipline group embarking on the development of TLOs in their discipline?” A considerable amount of advice was offered, including the following:

• Know the task – be clear on the deliverables, the timeline and the budget available.
• Establish a process – maintain a calendar of events, keep comprehensive records and plan ahead.
• Know the people – find out who is involved, what they do and where they are during the project.
• Establish and maintain a good working relationship and open lines of communication with all parties.
• Know yourself – be aware of your own skills and capabilities and be prepared to take on new roles and responsibilities wherever possible.
• Establish yourself as the central point for all communications and activities as much as is possible.
• Be prepared for track changes, amendments and due dates – do not assume that what was given one week will still hold the following.
• Collect all evidence and data concerning the project’s activity. Build that evidence into the ongoing program.
• Adopt ideas from other discipline groups and alter to suit your own.
• Offer a constructive objective voice within your own project team.
• Acknowledge in writing the contributions offered by people (building and maintaining relationships).
• Maintain ongoing contact with the ALTC.
• Connect with any other project officers in your city – their support and the ability to share resources is very useful.
• Seek early (and ongoing) clarification of ALTC procedures and processes, eg current standards/templates/procedures for documents, processes for approval, contacts etc.
• Be prepared for the direction of work within the project to change very quickly and in directions not anticipated.
• Develop effective communication lines and expectations with your Discipline Scholar(s).

A large number of more ‘in depth’ pieces of advice were also included, such as:

• Systems knowledge – project officers needs to understand the organisational processes in which they are operating, eg financial systems, operational practices
• Ability to support the group in strategies undertaken – this will be enhanced by establishing an operational plan
• Time – to read as much information as possible and acculturate to the project. The project officer needs to understand the context of the TLOs, the challenges of the change process in this discipline, ‘political’ sensitivities, key stakeholder groups, acronyms etc.
• Invite feedback in explicit, non-onerous ways for the key information or responses you seek but also enable open-ended input for interested parties to get involved more fully. Again, use multiple communication channels as organisational hierarchies do not guarantee information flow.
• Use local, institutional networks to pilot or workshop consultation approaches and strategies, and to road-test ideas and drafts with often highly engaged and critical peers.
• Communicate progress to your growing stakeholder network at intervals so that their input is acknowledged and reflected; goodwill, transparency and rigour are at the heart of the process and strong factors in achieving endorsement.
• Note-keeping and email management – the LTAS project generates a vast amount of notes, files and emails. It is important to manage this well from the start of the project. This is particularly important for efficient report writing during and at the end of the project.
• Communication between project officer and discipline group – it is vital to establish work practices and the ethos behind the approach used. The project officer’s work is enhanced by provision of opportunities to share ideas (‘Think Tank’ approach) and information, eg ‘smart’ strategies
• preparedness to multi-skill and be flexible – a variety of skills are required such as: administrator, desk top publisher, researcher, promoter, events manager, editor, financial manager, independent adviser, coordinator, for the smooth management of the project. Be able and willing to be a ‘jack of all trades’ and flexible with work time frames.

• information management – be organised! Spend a lot of time in the early stages thinking about your information/file management structures. Talk to other project officers about what they have done in terms of organising computer files and the types of information they regularly need to access. Save as many lists of things, eg contact lists, document lists, in Excel rather than Word. When collecting initial information, eg compiling lists of contacts from web searching, it is better to collect more, eg organisation name, webpage, email address, postal address, phone number, other organisational contacts etc. than you think you will need, rather than have to go back and fill in gaps later. When using Excel, save each item of information in a separate column, eg first name, surname, title, position, organisation, PO box, city, state, and postcode should all have their own columns

• development of systems early for recording stakeholder information with as much detail as possible, eg title, affiliation, role, contact, disciplinary interests, as this information will be applied on numerous occasions for different purposes, eg communications, reporting, targeting consultations/workshops etc. Make provision for connecting feedback to sources for both aggregation and traceability at later stages. Include affiliated roles among your stakeholders, eg educational developers and learning support advisers.

• devising a variety of consultation methods to maximise reach and representation in terms of mode, eg face-to-face, asynchronous and synchronous online communication, online surveys, and use both formal and informal consultations, ‘piggybacking’ on existing meetings of bodies, groups and events such learning and teaching days

• being aware of the work that precedes your project – the project officers who are appointed after the period of the first year of the project have the benefit of the work and learnings (particularly in the form of our reporting documents and the Standards Statements, but also, for example, in terms of the different forms of discipline consultation and engagement that were used) from a range of disciplines. Future project officers are encouraged to capitalise on this work and use it to inform the effective and efficient development of their projects as much as possible

• the importance of building relationships with other project officers – for each discipline, the task of developing the threshold learning outcomes is a very significant project. It is important to develop relationships with other project officers (past and present) for collegial support and, also, so that resources and ideas can be shared. It is especially important to be in regular contact with the ALTC.

3.5 Recommendations for the next steps

Each discipline group offered recommendations regarding the ‘next steps’. These recommendations were wide-ranging but had a number of commonalities. The need to maintain the project’s momentum was often mentioned, particularly in relation to:

• developing TLOs in other discipline areas/levels
• testing, embedding, and supporting the developed TLOs, and
• disseminating/discussing the developed TLOs (both nationally and internationally).

Most recommendations, however, were again quite discipline-specific and are summarised below for each discipline group.

Recommendations: Arts, Social Sciences, and Humanities Discipline Group

1. Support the establishment of threshold learning outcomes in other Arts, Social Sciences and Humanities (ASSH) disciplines and at levels over and above bachelor degree

Within the ASSH Discipline Group, several other disciplines, eg anthropology, criminology, demography, political science, sociology, indicated a clear willingness to develop their own TLOs. Some immediate support, both in terms of funding and standards-setting expertise, eg advice provided on a consultancy basis by the Discipline Scholar or key members of Discipline Reference Groups, could helpfully build on the momentum already established by work in the LTAS project and perhaps foster interest in the development of standards in an even broader array of disciplines. It would also be useful to actively encourage standards development amongst those disciplines that have not already indicated any interest in this process. For all of these disciplines as well as for those that have already established TLOs, it would also be useful to take up work to define the standards for qualification levels other than that of the bachelor degree, eg honours, PhD.

2. Support efforts to implement and evaluate the Standards Statements

DASSH “fully” endorsed the process undertaken to define the TLOs for History and Geography and went on to recommend that these now need to be tested in universities across Australia. There is clear interest in building on the momentum associated with the LTAS project.
3. Support discipline communities’ work to maintain the Standards Statements
   Most peak bodies representing ASSH disciplines operate with a voluntary secretariat and executive, drawn predominantly from academic communities. The organisations typically have very limited budgets, derived from annual membership fees and publisher payments for society journals. If these peak bodies and their members are expected to include in their future workload maintenance and review of TLOs, some form of support needs to be offered those organisations.

4. Support the investigation and promotion of alternative uses of the Standards Statements
   It has become apparent that the Standards Statements may have value in supporting, if not underpinning, activities over and above quality assurance. Stakeholders have suggested these could include: program design and curriculum development; discipline ‘stocktaking’ as a foundation for future review; benchmarking for reciprocal study abroad; promoting the discipline to domestic and international students as well as to the wider community; and as a ‘talking aid’ in conversations with prospective students, parents, career counsellors, employers, politicians, professional bodies, and scholars in allied disciplines. In another development, the Academy of Science’s National Committee for Geography has indicated its intention to use the Standards Statement as part of a broader national decadal plan for the discipline. Such outcomes point to the ‘value-adding’ potential of the Standards Statements. There may be real merit in more fully exploring alternative uses of the Standards Statements. That information might encourage other disciplines to engage in the work required to develop their own standards and point to ways standards can contribute more broadly than ever intended to high quality tertiary education in Australia.

5. Support the national and international dissemination of information about the LTAS project and its outcomes
   The LTAS project appears to have very successfully supported the development of academic standards in selected discipline areas. It is critical to maintain the momentum this work has built by ensuring that the project’s outcomes are publicised widely across Australia. This might take the form of a national launch of the various Standards Statements, eg perhaps modelled on the 2010 February Forum. This promotion could be accompanied productively by opportunities for stakeholder groups to discuss ways in which the Standards might now be implemented, maintained and employed (see Points 2, 3 and 4 above). There is also an excellent opportunity now to publicise the process and outcomes of this successful venture in other relevant jurisdictions through, for instance, conference presentations and visits to key institutions and stakeholders, eg EUROGEO, the Higher Education Academy. During the year of this project (2010) it has been very apparent that key higher education stakeholders from countries as diverse as Canada, Syria and Thailand are interested in the Australian project and its outcomes.

   (EUROGEO is a European, non-governmental, non-profit organisation founded in 1979 which networks geographers from all walks of life and organisations who are interested in the theory, methods, and practice of Geography.)

Recommendations: Business, Management and Economic Discipline Group

- Fund strategically placed, collaborative projects in 2011–13 that promote the development of efficient, reliable and valid systems of moderation and peer review
- Fund annual symposium on standards in 2011 and 2012 to support the formative processes underway
- Fund mentoring program for some Discipline Scholars to provide part-time support to new disciplines in 2011 to define standards
- Continue collaborative efforts with European Tuning and other benchmarking efforts, eg UK
- Establish the TLOs as valid expression of discipline’s thresholds and clarify their potential use in future standards audits
- Work collaboratively with disciplines to identify appropriate approaches that fit standards assessment, eg when a professional body’s accreditation process, such as that for speech pathology, can suffice, and clarify extensively.

Recommendations: Creative and Performing Arts Discipline Group

The chief objective will be to maintain the momentum achieved this year. This would be exemplified by the formal development of a Council of Deans of Creative and Performing Arts in early 2011. If possible, the creation of a network of Associate Deans by mid-2011 would follow and, once there is a clearer idea of how TEQSA is going to operate, they would become involved in operational aspects of discipline-based quality assurance.

The key LTAS objective for 2011 will be to develop the TLOs for honours, masters by research and PhD as a subsequent activity.

Recommendations: Engineering and ICT Discipline Group

The development of the national academic standards offers an excellent opportunity to promulgate best practice teaching, learning and assessment materials across the Engineering and ICT schools in Australia. In order to achieve this, several additional steps are:

1. Develop rubrics that document the required attainment levels of each of the standards. These will underpin a criterion-referenced assessment strategy. These rubrics will need to be customised by program leaders for their own contexts.
2. Develop best practice teaching, learning and assessment resources to support the development of each of the TLOs. These resources will ensure development of the outcomes across all the levels of a program and will provide productivity improvements across the sector. For an example, see the AAEE-Scholar site (Australasian Association for Engineering Education, 2010).

3. Develop communities of practice around the TLOs and in technical subject domains. This builds on what AAEE and ACEC, the Australian Computing Education Conference, have already achieved.

4. Research how these steps can be integrated to deliver a higher quality educational system, particularly as it relates to the work of individual academics. What are the levers for change?

Recommendations: Health, Medicine and Veterinary Science Discipline Group

“The advisors group strongly endorsed the proposal from Professor Angus, President, Council of Medical Deans, that maintaining momentum and harnessing acquired knowledge, processes and networks was needed into the next phase to refine/embed threshold learning outcomes in health disciplines, and that this work should continue to be led by the current scholars. The exact nature of this work was discussed, with three main activities recommended:

1. evaluation of the outcomes and assessment of the threshold learning outcomes in practice
2. assisting professions who are not at the registration level to catch up, and
3. brokering with AUQA and registration/accreditation bodies to ensure that a doubling up of processes and auditing requirements does not occur.”

Excerpt from the Minutes of meeting of Project Advisory Panel, 24 September 2010.

Recommendations: Law Discipline Group

1. Uncertainty over ‘Phase Two’ and the nature of TEQSA

Senior law academics indicated unease that the sector is establishing TLOs without knowing how compliance will be assessed or what the consequences of non-compliance might be. TEQSA will need to work with the disciplines to ensure the verification processes are seen as legitimate and proportionate to risk so that members of the sector do not feel that they have created a ‘rod for their own backs’. Any suggestion that the verification of compliance process is unfair may have significant repercussions for those who have contributed to the LTAS project.

2. The next stage for Law

In an effort to minimise the above possibility, it has been suggested to the Council of Australian law Deans (CALD) that it should extend its involvement with the ALTC and with the Academic Standards. Some suggestions relate to an expansion of the range of Standards Statements for TLOs (the New South Wales Legal Profession Admission Board's Diploma in Law, the Honours component of the Bachelor of Laws, the Juris Doctor, Practical Legal Training, Graduate Diplomas, Masters of Law, SJDs or PhDs). At its November meeting, CALD decided that its next focus should be on the Juris Doctor.

Other suggestions related to the successful implementation of the TLOs for the Bachelor of Laws and engagement with compliance requirements in anticipation of the new national standards framework under the Tertiary Education Quality and Standards Agency (TEQSA). How can the TLOs best operate in conjunction with professional standards (in Law, the CALD Standards and the Priestley requirements)? How can the discipline sustain and take advantage of the national and sector-wide connections that have been created by the project? For Law, the most obvious of these is the Law Associate Deans Network, which CALD has already agreed to support.

3.6 Summing up

The project has achieved a significant level of support across a broad range of sectors and disciplines and built considerable momentum, largely through having a tangible product that is seen to offer a range of benefits.

A great deal has been learned about what works and what does not and the type of support that would generate an efficient and effective ongoing process. These principles will be incorporated into the Partner Pack.

To ensure that the momentum and high national and international visibility that has been established continues productively, two critical factors need to be addressed:

1. clarification of the place of these discipline standards within the new quality assurance framework and, therefore, the nature of the work that should follow
2. creation of an efficient, minimally bureaucratic infrastructure to support the ongoing development, review and maintenance of discipline standards in a cost-effective and collaborative manner.

The next section addresses the second of these factors.
4: Threshold learning outcomes: Their potential use in outcomes-based quality assurance

The LTAS project has identified conditions under which threshold learning outcomes can be developed and ‘owned’ by discipline communities. One of the deliverables for the LTAS project was, through consultation, to highlight and evaluate opportunities for sustainable incorporation of TLOs into the new quality assurance regime. This section sets out suggestions for a sustainable process for developing, maintaining and monitoring disciplinary based academic standards.

In sum, this project has succeeded beyond expectations in the level of engagement of the discipline communities that has been achieved. It has earned acceptance both as a successful project and for the new quality assurance framework. It has credibility, high national visibility and an extraordinary level of active stakeholder involvement at a senior level. This success, however, carries a risk. Failure of the new quality assurance framework to follow through on the commitment made by the professional and academic bodies and peak industry groups will create a credibility gap. At risk is the loss of goodwill from major stakeholders which will be essential to their future involvement.

Hence, this section synthesises the experience, observations and consultation from the project and proposes a feasible means of maintaining the disciplinary standards infrastructure and momentum that the project has initiated.

4.1 Policy context: TLOs have to ‘count’

This project was successful, not only in producing sets of TLOs but in achieving broadly based endorsement of both the process and outcomes from peak bodies in industry, the professions and academia. It must be acknowledged that the commitment to the process is an outcome not just of the skills of the groups involved, but of the policy context under which the process was commenced and conducted. Discipline communities responded enthusiastically to the Australian Government’s statement:

Key to the success of the new quality assurance arrangements – and meaningful academic standards in particular – will be the active involvement of the academic community ...

Discipline communities will ‘own’ and take responsibility for implementing academic standards ... within the academic traditions of collegiality, peer review, pre-eminence of disciplines and, importantly, academic autonomy ...

Australian Government, 2009
Transforming Australia’s Higher Education System p.32

A considerable level of momentum and peak body support has developed and new disciplines are volunteering to participate in the process without expectation of significant funding support. The more explicit emphasis on outcomes-based quality assurance signalled in the Bradley Report and other documents relating to the basis of TEQSA’s operations and authority had not yet been operationalised at the time of writing this report.

When the LTAS project was commenced it was anticipated that a dialogue between TEQSA and the discipline communities would have formed part of the final stages of the project. This did not prove possible because of the timeline of TEQSA’s establishment. Nevertheless, it is anticipated that experience gained in this project will be useful when TEQSA begins its detailed consultations and considerations in this area.

4.2 How might discipline-based TLOs be best used?

Quality improvement within institutions

It is already evident in activities subsequent to the project that institutions, via the Deans’ Councils and groups of Associate or Assistant Deans Teaching and Learning, are working on approaches to using TLOs as the basis of internal audit, curriculum renewal and assessment at the discipline level. Equivalent bodies in the larger private provider organisations are similarly taking a practical interest in using TLOs for curriculum and internal quality assurance. TLOs have the potential to be used in cross-institutional moderation or assessment arrangements.

As a component of external quality assurance

Outcomes-based quality assurance, whether focused at the level of the institution, the degree or the discipline program will, of necessity, develop approaches to assuring that graduates of a program are achieving a nationally defined minimum standard.

Other aspects of outcomes-based quality assurance can be addressed in other ways, for example, measures of the student experience or generic attributes or the quality of teaching, but the proverbial ‘bottom line’ is assurance that graduates in specific disciplines have an agreed threshold of discipline-specific capability irrespective of their graduating institution. Generic graduate attributes are not a sufficient indicator of student capabilities within the discipline environment.
Communication, for example, involves very different skills in the context of a lawyer/client interview than it does in the context of managing an engineering project.

The definition of discipline reference points or learning outcomes is a global phenomenon and Australian graduates will increasingly need to position themselves alongside their international colleagues.

4.3 Verifying achievement of the required standards or learning outcomes

There is considerable international and national precedent for expert panels reviewing samples of student work and assessment relating to samples of learning outcomes.

Alternatively, or in addition, expert panels in a given discipline could review with the institution the approaches it has taken to aligning curriculum and assessment with its defined learning outcomes and the processes it has employed to benchmark its assessment results and standards with other institutions or external reviewers.

Whichever approach is adopted the key difference between outcomes-based quality assurance and ‘fitness for purpose’ quality assurance is that there is a reference point, benchmark or threshold that is common across all institutions offering that program and against which evidence of achievement must be assessed. The TLOs provide that reference point at the discipline and program level. The nature of the evidence required could be defined by TEQSA or could be negotiated between the agency and the provider.

Multiple patterns of outcomes-based quality assurance are possible and TEQSA’s consultation processes will identify those most acceptable and feasible in the Australian context. These approaches need not be universal but can be selective and based on a risk assessment. Some possibilities suggested during the course of the LTAS project include:

- identify target disciplines over a three- or five-year cycle and review all institutions on one or more of those disciplines over the cycle
- identify target AQF levels over a three- or five-year cycle and review a sample of discipline qualifications at those levels in all institutions or a sample of institutions
- identify a cycle of institutional reviews and require each institution to nominate two-three disciplines for discipline audit at specified AQF levels
- evaluate the criteria and processes used by the major professional accrediting bodies and, subject to negotiated conditions and regular review, license them to perform the relevant discipline audits for entry level qualifications
- operate a cycle of risk-based rolling discipline or AQF level audits parallel to, but separate from, institutional audits, and
- specify the processes to be used and the evidence to be provided for audit of discipline or AQF level (or both) and invite proposals from each institution as to how they intend to present the evidence.

Whichever of these options or combinations is considered, expert panels will need to have credibility and expertise in the disciplines under review. Where adequacy of institutional assessment of learning outcomes is to be reviewed, it is essential that those conducting the review have knowledge of the content and norms of the discipline. This applies whether the review is focused on a particular AQF level or on disciplines, since outcomes at given AQF levels will only be able to be audited in the context of a specific discipline or set of disciplines. Similarly, meaningful assessment of generic attributes or skills can only be interpreted within a disciplinary context.

4.4 Discipline expert panels

For any review that requires a judgement on adequacy of assessment of learning outcomes in specific disciplines, panels would need to incorporate recognised disciplinary expertise. Some contributors to the LTAS project suggested that this expertise should be equivalent to the expertise brought to bear on the evaluation of research funding proposals in order for learning outcomes quality assurance to be credible. For this purpose:

- discipline expert panels could be maintained on a register with rolling membership to promote consistency and organisational learning
- expert panels could be comprised of one ‘professional auditor’ experienced in review processes and AQF descriptors, with the majority having recognised expertise in the discipline or cognate discipline
- discipline experts could be recruited by a call for expressions of interest (EOI) from disciplinary bodies or from individuals to form discipline review panels for a specified number of reviews or period of time.

4.5 Elements of a sustainable outcomes-based quality system

Maintaining a system of outcomes-based quality assurance and institutional regulation that leads to quality improvement, as opposed to just identification of quality deficits, requires a sound conceptual base and a sustainable infrastructure linked to support for institutional development.
A sustainable system for the maintenance of learning outcomes-based quality assurance would require the following elements:

1. an efficient system for review of learning outcomes assessment that has face validity and meets the needs of institutions, TEQSA and other stakeholders transparently and efficiently. Possible approaches are outlined above.

2. an independent central agency to manage an accessible repository of existing standards and a system of support for setting and revising standards

3. a set of protocols for determining the eligibility of disciplines to access support from the central agency

4. a system of support for disciplines that initiate a standard-setting process

5. a system of support for accrediting bodies, professional associations and discipline societies to ensure their capability to engage effectively with the system

6. a simple set of guidelines and templates for disciplines to follow in their deliberations

7. an online searchable resource for examples of outcomes, assessment and review processes and supporting research and/or literature

8. a system of support for higher education providers, accrediting bodies and professional associations preparing to embed the learning outcomes in their curriculum and quality assurance (QA) processes, and

9. a process for identifying gaps in knowledge or practice and for commissioning studies to fill those gaps.

A number of these elements is outlined in general terms below.

1. **An efficient system for review of learning outcomes assessment that has face validity and meets the needs of institutions, TEQSA and other stakeholders transparently and efficiently**

   A number of basic principles need to be agreed upon to underpin the quality assurance of graduate outcomes. These include:

   - academic autonomy and institutional diversity should be respected and encouraged
   - the responsibility for assessing learning outcomes rests with accredited higher education providers. However, outcomes-based quality assurance requires that institutions are able to provide evidence acceptable to an expert panel that their graduates are achieving or exceeding the defined threshold learning outcomes.
   - a roster of priority disciplines would assist in the direction of effort by disciplines and institutions conducting curriculum review and renewal
   - protocols and programs for review of specific disciplines and of institutions must be promulgated with sufficient lead time to allow adaptation of existing institutional processes
   - protocols and processes for review of outcomes assessment should recognise the considerable variation in nature and capacity of institutional data management systems and should not make unreasonable demands
   - quality assurance programs should be risk-based and proportionate
   - review of AQF level or disciplinary threshold learning outcomes assessment should not give rise to unintended consequences such as stifling innovation, gravitation towards the mean or 'teaching to the test'
   - the relationship between TEQSA processes and professional accreditation should be addressed specifically in order to avoid wasteful duplication and excess burden on institutions
   - external reference points should be a standard component of learning outcomes assessment. This could take the form of expert discipline panels drawn from the disciplines themselves both in Australia and overseas
   - while comparability has benefits, a ‘one size fits all’ approach to audit of outcomes assessment is unlikely to be sufficiently sensitive to allow for established disciplinary practice in assessment. Hence, disciplines should be involved in the design of audit processes and data requirements in their discipline.

   These principles are underpinned by the assumption that it will continue to be the role of the institutions to manage assessment of their graduates with an additional responsibility being to demonstrate to TEQSA that they are implementing curriculum and assessment practices that ensure the achievement of threshold learning outcomes at appropriate AQF levels. This will require the production of evidence and some form of external validation of that evidence.

   One of the biggest issues facing an outcomes-based quality assurance process is the need for robust systems development within institutions to provide evidence of student performance against intended learning outcomes or programs and majors. In addition to archiving graded student work data, the archiving of key process data, eg curriculum alignment, peer review and moderation, might be relevant. Specific collaborative projects between institutions and/or the relevant auditing body might be necessary to develop the capacity of both staff and systems. The ALTC could have a role in establishing and monitoring those collaborative projects.
2. An independent central agency to manage an accessible repository of existing standards and a system of support for setting, reviewing and maintaining standards

The established credibility and reputation of the ALTC and the success of the Learning and Teaching Academic Standards (LTAS) demonstration project suggested the ALTC as the appropriate body to provide this independent central infrastructure. The ALTC is developing a system of support based on its experience in the demonstration project. In overview the ALTC has commenced the development of systems to administer guidelines and provide hands-on support by peer mentors for discipline groups embarking on a standards-setting project. In addition, it is maintaining the repository of developed standards and a system for regular review.

However, recent Federal budget announcements indicate that the ALTC will not continue and it is suggested, therefore, that an alternative be identified that is able to provide this type of support.

3. A set of protocols for determining the eligibility of disciplines to access support from the central agency

Criteria would be needed to identify those disciplines that are eligible to access financial, project management and peer support for standard-setting. Not all disciplines may need all forms of support, and some may have a higher priority on the national agenda than others.

In applying for support, discipline groups could be required to mount a proposal that addresses criteria and protocols that would be revised regularly in the light of experience.

A lead agency and project leaders would need to be identified by each discipline. Following from the demonstration project, this process has already commenced with new disciplines undertaking standard-setting work.

4. A system of support for disciplines that initiate a standard-setting process

The ALTC is providing several types of support for discipline-based groups during 2011:

- limited funding support for a part-time project leader – subject to consultation this could be of the order of $20,000 for part-time release from normal duties
- limited project management support to assist lead agencies to establish and maintain working groups and reference groups and to meet deadlines
- templates and guidelines for learning outcomes, examples and a [Discipline] Standards Document – see item 5 below
- limited consultancy support from peers who have led successful prior projects – the ALTC maintains a small register of Discipline Scholars from the demonstration project and standards project leaders who are prepared to provide advice on a consultancy basis as needed.

5. A simple set of guidelines and templates for disciplines to follow in their deliberations

The ALTC has developed a set of templates and guidelines for establishing discipline advisory groups, documenting their deliberations, conducting consultations and producing draft and final documents reporting on the discipline standards and examples.

Examples of these as developed to date are currently posted on the ALTC website at www.altc.edu.au/standards/.

6. An online searchable resource for examples of outcomes, assessment and audit processes and supporting research and/or literature

The ALTC has, as part of the LTAS project, developed an online searchable Resource Library for disciplines, higher education providers, TEQSA and other stakeholders. The resources have been identified by the LTAS project participants and by other experts and have been reviewed and annotated to identify their scope and utility in the implementation of outcomes-based QA. The database is accessible through www.altc.edu.au.

An extension of this online database will hold the standards documents for each discipline as they are developed.

7. A system of support for higher education providers, accrediting bodies and professional associations preparing to embed the learning outcomes in their curriculum and quality assurance (QA) processes.

A particular priority is the provision of opportunities for academic staff to debate and share with each other approaches to:

- defining and embedding mission-based outcomes in addition to threshold outcomes
- mapping outcomes onto curricula;
- assessing outcomes
- ensuring consistency in grading standards
- developing systems for record keeping to allow outcomes assessment to be demonstrated at audit
- using outcomes-based assessment for curriculum renewal and improvement, and
- establishing and assessing standards for inter-disciplinary studies.
8. A process for identifying gaps in knowledge or practice and for commissioning studies to fill those gaps

In the absence of certainty about the future of teaching and learning grants and awards there is no framework for achieving this.

4.6 Issues for consideration

A number of issues present themselves for resolution as part of the TEQSA consultation process.

Disciplines

- Is there a priority list of ‘disciplines’ subject to national attention?
- What criteria and process should be used to identify them?
- How could ‘non-priority’ discipline areas be encouraged to engage with curriculum renewal?
- How do we deal with disciplines that are not priorities but want to participate?
- How do ‘disciplines’ and regulated professions interact?
- Should we think about specifying a more outcomes-focused approach for national accreditation agencies as part of national registration reforms?

External quality assurance process

- What is the desired focus and cycle?
- How will auditors or review panels be ‘retrained’?
- What will be the role of expert panels and/or professional accreditation committees?
- How will institutions be consulted to ensure that outcomes-based quality assurance is feasible within reasonable resource constraints?

4.7 Conclusion

Whatever the eventual outcomes from TEQSA’s consultations and operational decisions, a coordinated approach to providing these elements will be essential for an effective outcomes based quality assurance process.
Appendix 1: LTAS Project Steering Group

Professor Daryl Le Grew  
Chair  
Board Member, Australian Learning and Teaching Council (ALTC)

Dr Claire Atkinson (ex officio)  
Director, Quality Assurance Unit  
Department of Education, Employment and Workplace Relations (DEEWR)

Dr George Brown  
ALTC Board Member and  
Group Academic Director, Think: Education Group

Professor Anthony Cahalan  
Past Chair, Australasian Council of Deans of Arts, Social Sciences and Humanities

Professor Jane den Hollander  
Board Member, Australian Learning and Teaching Council (ALTC)

Professor Christine Ewan  
Project Director, Learning and Teaching Academic Standards project,  
Australian Learning and Teaching Council (ALTC)

Professor Richard Henry  
Deputy Vice-Chancellor/PVC (Academic), University of New South Wales Chair,  
Committee of Universities Australia

Dr Carol Nicoll  
CEO  
Australian Learning and Teaching Council (ALTC)

Ms Catherine Vandermark  
Branch Manager, Higher Education Quality Branch,  
Department of Education, Employment and Workplace Relations (DEEWR)

Dr David Woodhouse  
Executive Director, Australian Universities Quality Agency (AUQA)

Mr Michael Algar  
Executive Officer  
Manager, Events and Secretariat, Australian Learning and Teaching Council (ALTC)
## Appendix 2: LTAS project: Project Team, Discipline Scholars and project officers

### ALTC Project Group

<table>
<thead>
<tr>
<th>Role</th>
<th>Name and University</th>
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<tbody>
<tr>
<td>Project Director</td>
<td>Emeritus Professor Christine Ewan AM</td>
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<td>Project Executive Officer</td>
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<td></td>
<td>Ms Angel Tang</td>
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<tr>
<td>Senior Project Officer</td>
<td>Dr Adam Morgan</td>
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<td>Web Resources Manager</td>
<td>Ms Trish Treagus</td>
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### Discipline Scholars and Project Officers

#### Architecture and Building (July 1 commencement)

<table>
<thead>
<tr>
<th>Discipline Scholar</th>
<th>Project Officer</th>
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<tbody>
<tr>
<td>Professor Susan Savage (Architecture)</td>
<td>Dr Barbara Jack (Architecture)</td>
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<tr>
<td>Queensland University of Technology</td>
<td>Queensland University of Technology</td>
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<tr>
<td>Associate Professor Sidney Newton (Building)</td>
<td>Ms Rosalie Goldsmith (Building)</td>
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<tr>
<td>University of New South Wales</td>
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#### Arts, Social Sciences and Humanities

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<tr>
<td>Professor Iain Hay</td>
<td>Ms Jill Rashleigh</td>
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<td>Flinders University</td>
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#### Business, Management and Economics

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<tr>
<td>Associate Professor Mark Freeman</td>
<td>Ms Cheryl Bell</td>
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#### Creative and Performing Arts

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<tr>
<td>Professor Jonathan Holmes</td>
<td>Ms Wendy Fountain</td>
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<td>University of Tasmania</td>
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#### Engineering and ICT

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<td>Professor Ian Cameron</td>
<td>Dr Sue Wright</td>
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<td>University of Queensland</td>
<td>University of Queensland</td>
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<td>Associate Professor Roger Hadgraft</td>
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<tr>
<td>University of Melbourne</td>
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#### Health, Medicine and Veterinary Science

<table>
<thead>
<tr>
<th>Discipline Scholar</th>
<th>Project Officer</th>
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<tbody>
<tr>
<td>Professor Amanda Henderson</td>
<td>Dr Rachael Pitt</td>
</tr>
<tr>
<td>Griffith University</td>
<td>The University of Adelaide</td>
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<tr>
<td>Associate Professor Maree O’Keefe</td>
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<tr>
<td>The University of Adelaide</td>
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</table>

#### Law

<table>
<thead>
<tr>
<th>Discipline Scholar</th>
<th>Project Officer</th>
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<tbody>
<tr>
<td>Professor Sally Kift</td>
<td>Ms Rachael Field</td>
</tr>
<tr>
<td>Queensland University of Technology</td>
<td>Queensland University of Technology</td>
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<tr>
<td>Winthrop Professor Mark Israel</td>
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<tr>
<td>University of Western Australia</td>
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</table>

#### Science (July 1 commencement)

<table>
<thead>
<tr>
<th>Discipline Scholar</th>
<th>Project Officer</th>
</tr>
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<tbody>
<tr>
<td>Professor Susan Jones</td>
<td>Dr Jo-Anne Kelder</td>
</tr>
<tr>
<td>University of Tasmania</td>
<td>University of Tasmania</td>
</tr>
<tr>
<td>Professor Brian Yates</td>
<td></td>
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<tr>
<td>University of Tasmania</td>
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</table>
### Appendix 3: Examples of uptake of TLOs by the academic community

<table>
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<tr>
<th>Uptake</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>The TLOs were presented during a workshop given at Imperial College, London. The TLOs raised discussions around how breadth and depth in engineering programs could be addressed through their application into programs. Many saw significant value in the statements due to their simplicity and the direct expression of what engineering capabilities are needed by graduates. Some were planning to use them as the basis of discussions about standards in the UK and elsewhere due to the coherent framework they represent.</td>
<td>Imperial College, London</td>
</tr>
<tr>
<td>At a recent Higher Education Research and Development Society of Australia (HERDSA) meeting on e-portfolios, an academic from the engineering school spoke of the five Engineering and ICT TLOs that he had encountered at a workshop given by a Discipline Scholar (Associate Professor Roger Hadgraft) a week earlier. The academic described the TLOs as ‘useful’ in describing in a clear and concise way what engineers do. As such they are useful in that students can use them to support and direct their own learning.</td>
<td>HERDSA meeting, RMIT</td>
</tr>
<tr>
<td>Numerous pieces of anecdotal evidence – current and near-future program reviews explicitly have expressed an intention to take the TLOs as a starting point and ensure they are aligned.</td>
<td>Southern Cross University</td>
</tr>
<tr>
<td>University of Tasmania</td>
<td></td>
</tr>
<tr>
<td>University of the Sunshine Coast</td>
<td></td>
</tr>
<tr>
<td>Key stakeholders and individual business schools engaged in post-endorsement implications. AACSBS-accredited business schools have indicated the standards will overlay existing program learning outcomes quite easily.</td>
<td>Queensland University of Technology</td>
</tr>
<tr>
<td>The University of Queensland</td>
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<tr>
<td>The University of Sydney</td>
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<tr>
<td>University of South Australia</td>
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<tr>
<td>The University of Western Australia</td>
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<tr>
<td>Integration of the draft Threshold Learning Outcomes into the statements of graduate capabilities within the RMIT Chiropractic programs.</td>
<td>RMIT</td>
</tr>
<tr>
<td>La Trobe University, Bendigo has been using the bachelor degree TLOs to remap the creative arts degree at Bendigo as it is being revised.</td>
<td>La Trobe, Bendigo</td>
</tr>
<tr>
<td>The Creative and Performing Arts coursework masters TLOs have been written into the assessment rubric for one of the key units in the degree (Master of Fine Art and Design) and tested in assessing a number of candidates in Semester 2 in 2010 at the University of Tasmania (UTas). The rubric will be further refined in 2011.</td>
<td>UTas</td>
</tr>
<tr>
<td>The Creative and Performing Arts TLO document is being referred to (in its draft form) in the review of the BMus at Australian National University (ANU).</td>
<td>ANU</td>
</tr>
<tr>
<td>A similar process is about to occur at the University of South Australia in their writing program.</td>
<td>UniSA</td>
</tr>
<tr>
<td>Uptake</td>
<td>Where</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>The Australian National University (ANU) College of Law had already begun a major review of its LLB curriculum, mapping a variety of skills across the curriculum and working with course conveners to make sure that there are adequate opportunities for students to learn, to be assessed on, and to receive feedback on those skills. The LTAS project confirmed its choices of skills. It also confirmed its decision to work toward better alignment between course objectives and assessment practice.</td>
<td>ANU</td>
</tr>
<tr>
<td>At the University of Wollongong (UoW), the LTAS project has impacted on curriculum review and a substantial project around curriculum mapping of graduate qualities.</td>
<td>UoW</td>
</tr>
<tr>
<td>The School of Law at Deakin University has embarked on a course review. LLB Course Goals were developed by incorporating the Threshold Learning Outcomes (TLOs). As a result of the local consultation at Deakin University, the School is proposing to introduce a new unit on Legal Theory and Practice in the context of Negotiation.</td>
<td>Deakin</td>
</tr>
<tr>
<td>At Southern Cross University (SCU), TLOs are being used as part of an assessment mapping exercise of all core LLB units within the school. Assessment items are being mapped against a range of criteria (generic graduate attributes, skills and values); identified learning outcomes in specific units, and TLOs. Two assessors are re-designing aspects of their assessment to align with specific identified TLOs.</td>
<td>SCU</td>
</tr>
<tr>
<td>The University of Tasmania (UTas) has used the TLOs to help to confirm aspects of its Law Faculty’s curriculum review process and consider the requirements of its degree.</td>
<td>UTas</td>
</tr>
<tr>
<td>Review of Practical Legal Training competencies: <em>The Australasian Professional Legal Education Council is discussing a review of the Practical Legal Training competencies in 2011 and has indicated that they will be guided by the TLO development process for the Bachelor of Laws.</em></td>
<td>Australasian Professional Legal Education Council</td>
</tr>
</tbody>
</table>
## Appendix 4: Shortened forms

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<th>Abbreviation</th>
<th>Full Form</th>
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<td>AACSB</td>
<td>Association of Advance Collegiate Schools of Business</td>
</tr>
<tr>
<td>AAL</td>
<td>Australian Academy of Law</td>
</tr>
<tr>
<td>AAWP</td>
<td>Australian Association of Writing Programs</td>
</tr>
<tr>
<td>ABA</td>
<td>American Bar Association</td>
</tr>
<tr>
<td>ABDC</td>
<td>Australian Business Deans Council</td>
</tr>
<tr>
<td>ACARA</td>
<td>Australian Curriculum, Assessment and Reporting Authority</td>
</tr>
<tr>
<td>ACS</td>
<td>Australian Computer Society</td>
</tr>
<tr>
<td>ADDICT</td>
<td>Australian Council of Deans of Information and Communications Technology</td>
</tr>
<tr>
<td>ACED</td>
<td>Australian Council of Engineering Deans</td>
</tr>
<tr>
<td>AEAG</td>
<td>Accounting Expert Advisory Group</td>
</tr>
<tr>
<td>ACPHIS</td>
<td>Australian Council of Professors and Heads of Information Systems</td>
</tr>
<tr>
<td>ACUADS</td>
<td>Australian Council of University Arts and Design Schools</td>
</tr>
<tr>
<td>ADSA</td>
<td>Australasian Association for Drama, Theatre and Performance Studies</td>
</tr>
<tr>
<td>AFAANZ</td>
<td>Accounting and Finance Association of Australia and New Zealand</td>
</tr>
<tr>
<td>AGTA</td>
<td>Australian Geography Teachers Association</td>
</tr>
<tr>
<td>AHA</td>
<td>Australian Historical Association</td>
</tr>
<tr>
<td>AHELO</td>
<td>Assessment of Higher Education Learning Outcomes</td>
</tr>
<tr>
<td>ALSA</td>
<td>The Australian Law Students' Association</td>
</tr>
<tr>
<td>ALTA</td>
<td>The Australasian Law Teachers’ Association</td>
</tr>
<tr>
<td>ALTC</td>
<td>Australian Learning and Teaching Council</td>
</tr>
<tr>
<td>ANZACLL</td>
<td>Australian and New Zealand Academic Law Librarians</td>
</tr>
<tr>
<td>APLEC</td>
<td>Australasian Professional Legal Education Council</td>
</tr>
<tr>
<td>AQF</td>
<td>Australian Qualifications Framework</td>
</tr>
<tr>
<td>AUQA</td>
<td>Australian Universities Quality Agency</td>
</tr>
<tr>
<td>ASPERA</td>
<td>Australian Screen Production Education and Research Association</td>
</tr>
<tr>
<td>ASSH</td>
<td>Arts, Social Sciences and Humanities</td>
</tr>
<tr>
<td>ATN</td>
<td>Australian Technology Network of Universities</td>
</tr>
<tr>
<td>BME</td>
<td>Business, Management and Economics</td>
</tr>
<tr>
<td>CALD</td>
<td>Council of Australian Law Deans</td>
</tr>
<tr>
<td>CAPA</td>
<td>Creative and Performing Arts</td>
</tr>
<tr>
<td>CLE</td>
<td>Continuing Legal Education</td>
</tr>
<tr>
<td>CLEA</td>
<td>Clinical Legal Education Association</td>
</tr>
<tr>
<td>COALA</td>
<td>Coalition of Australian Law Administrators</td>
</tr>
<tr>
<td>COAG</td>
<td>Council of Australian Governments</td>
</tr>
<tr>
<td>CPAA</td>
<td>CPA (Certified Practising Accountant) Australia</td>
</tr>
<tr>
<td>DASSH</td>
<td>Australasian Council of Deans of Arts, Social Sciences, and Humanities</td>
</tr>
<tr>
<td>DEEWR</td>
<td>Department of Education, Employment and Workplace Relations</td>
</tr>
<tr>
<td>EA</td>
<td>Engineering Australia</td>
</tr>
<tr>
<td>FAHS</td>
<td>Federation of Australian Historical Societies</td>
</tr>
<tr>
<td>GSNSW</td>
<td>Geographical Society of New South Wales (GSNSW)</td>
</tr>
<tr>
<td>HERDSA</td>
<td>Higher Education Research and Development Society of Australia</td>
</tr>
<tr>
<td>HTAA</td>
<td>History Teachers’ Association of Australia</td>
</tr>
<tr>
<td>HWA</td>
<td>Health Workforce Australia</td>
</tr>
<tr>
<td>IAG</td>
<td>Institute of Australian Geographers</td>
</tr>
<tr>
<td>ICAA</td>
<td>Institute of Chartered Accountants Australia</td>
</tr>
<tr>
<td>INLT</td>
<td>International Network for Learning and Teaching Geography in higher education</td>
</tr>
<tr>
<td>JD</td>
<td>Juris Doctor</td>
</tr>
<tr>
<td>LACC</td>
<td>Law Admissions Consultative Committee</td>
</tr>
<tr>
<td>Law AD Network</td>
<td>Law Associate and Assistant Deans (Learning and Teaching) Network</td>
</tr>
<tr>
<td>LCA</td>
<td>Law Council of Australia</td>
</tr>
<tr>
<td>LLB</td>
<td>Bachelor of Laws</td>
</tr>
<tr>
<td>LTAS</td>
<td>Learning and Teaching Academic Standards</td>
</tr>
<tr>
<td>NACTMUS</td>
<td>National Council of Tertiary Music Schools</td>
</tr>
<tr>
<td>NIA</td>
<td>National Institute of Accountants</td>
</tr>
<tr>
<td>NZGS</td>
<td>New Zealand Geographical Society</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-Operation and Development</td>
</tr>
<tr>
<td>Priestley 11</td>
<td>The eleven law subjects that must be completed before admission to practise as a legal practitioner in Australia</td>
</tr>
<tr>
<td>PhD</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>QAA</td>
<td>Quality Assurance Agency for Higher Education (UK)</td>
</tr>
<tr>
<td>RGSQ</td>
<td>Royal Geographical Society of Queensland</td>
</tr>
<tr>
<td>RGSSA</td>
<td>Royal Geographical Society of South Australia</td>
</tr>
<tr>
<td>SJD</td>
<td>Doctor of Juridical Science</td>
</tr>
<tr>
<td>TAFE</td>
<td>Technical and Further Education</td>
</tr>
<tr>
<td>TDCA</td>
<td>Tertiary Dance Council of Australia</td>
</tr>
<tr>
<td>TEQSA</td>
<td>Tertiary Education Quality and Standards Agency</td>
</tr>
<tr>
<td>TLO</td>
<td>Threshold Learning Outcome</td>
</tr>
<tr>
<td>UA</td>
<td>Universities Australia</td>
</tr>
<tr>
<td>UKCLE</td>
<td>United Kingdom Centre for Legal Education</td>
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www.altc.edu.au
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2011

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ASSURING GRADUATE OUTCOMES

Professor Beverley Oliver,
Curtin University
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<td><strong>Society and culture</strong></td>
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List of acronyms and abbreviations used

AAC&U  Association of American Colleges and Universities
ADRI  Approach Deploy Review Improve quality assurance model
AHEGS  Australian Higher Education Graduation Statement
AHELO  Assessment of Higher Education Learning Outcomes
ALTC  Australian Learning and Teaching Council Limited
AUQA  Australian Universities Quality Agency
BED  Built Environment and Design
BIHECC  Business, Industry and Higher Education Collaboration Council
CALD  Council of Australian Law Deans
CEQ  Course Experience Questionnaire
CLA  Collegiate Learning Assessment
EBP  Evidence Based Practice
ELOs  Essential Learning Outcomes
ESL  English as a Second Language
GAP  Graduate Attribute Project
GCTE  Graduate Certificate of Tertiary Education
Gen Y  Generation Y
GQS  Graduate Qualities Scale
GTS  Good Teaching Scale
GSS  Generic Skills Scale
HEAR  Higher Education Achievement Report
HEFCE  Higher Education Funding Council for England
ICT  Information and Communication Technologies
IPE  Interprofessional Education
IPL  Interprofessional Learning
IPP  Interprofessional Education
KIS  Key Information Sets
LTAS  Learning and Teaching Academic Standards
NILOA  National Institute for Learning Outcomes Assessment
OECD  Organisation for Economic Co-operation and Development
OHS  Occupational Health and Safety
OSI  Overall Satisfaction Item
OT  Occupational Therapy
TEQSA  Tertiary Education Quality and Standards Organisation
UK  United Kingdom
UNESCO  United Nations Educational, Scientific and Cultural Organization
US  United States
VIT  Victorian Institute of Teaching
VET  Vocational Education and Training
WIL  Work Integrated Learning
Overview

This guide sets out to provide the reader with a summary of what has been achieved, or is in progress, in relation to ALTC projects and fellowships associated with assuring graduate outcomes. The guide also makes recommendations about areas still to be addressed or where further work is needed. As detailed in the literature review, ‘assuring’ graduate outcomes means using a quality assurance approach. This means that in terms of graduate outcomes, institutions and curriculum leaders must draw on an evidence base to:

- determine the outcomes their graduates need, and at what standard
- know where and how the outcomes are developed and assessed
- evaluate the standards at which the outcomes are achieved, and
- drawing on evidence of achievement, implement strategies to improve graduate outcomes as part of the quality process.

Graduate outcomes include knowledge outcomes and generic outcomes (generally referred to as graduate attributes). Often, these knowledge and generic outcomes are inseparable because generic outcomes are entwined with discipline knowledge and associated professional practice. It is acknowledged that the transferability or transformability of generic skills is contested. Even so, this guide focuses more on generic skills (graduate attributes) than on outcomes related to discipline knowledge because that is the focus of most of the projects and fellowships. For this reason, summaries of the projects and fellowships highlight the aspects most clearly aligned with the theme of assuring graduate outcomes, as delineated in the literature review. The guide also provides links to project and fellowship resources that can be adopted or adapted for re-use.

The literature review together with the 54 projects and fellowships related to the theme of assuring graduate outcomes shows that extensive work has been undertaken in the field, both within and beyond Australia. The literature review includes a scan of Australian universities’ current policies and statements of graduate attributes. Universities’ most common generic attributes, apart from knowledge outcomes, appear to cluster in seven broad areas:

1. Written and oral communication
2. Critical and analytical (and sometimes creative and reflective) thinking
3. Problem-solving (including generating ideas and innovative solutions)
4. Information literacy, often associated with technology
5. Learning and working independently
6. Learning and working collaboratively
7. Ethical and inclusive engagement with communities, cultures and nations.

Many projects and fellowships have engaged stakeholders (graduates, employers and academics) to glean which capabilities are important, and how well they are generally demonstrated. It would be fair to say that views about graduate demonstration of generic outcomes are often not overly positive. Universities are beginning to be more specific about which of the generic outcomes (graduate attributes) are ‘developed’ or ‘fostered’, and more importantly which ones are assessed (or warranted). In 2010, the ALTC Learning and Teaching Academic Standards Project facilitated conversations about standards within targeted disciplines. A few universities specify levels of achievement (standards) in their statements about graduate attributes. To be able to communicate how well a graduate can demonstrate an outcome is crucial within a quality assurance approach, and this applies to minimum standards as well as higher standards of achievement.
Measuring graduate outcomes, particularly generic outcomes, is contentious and difficult. Nevertheless it is the heart of the enterprise in universities and institutions that confer qualifications. Diplomas and degrees are designed to produce educated and engaged citizens. They are also entry tickets to professions, careers and further study. Therefore, they are key to employability as well as ensuring that the expectations of graduates, the academy, the professions and the community, are met. Policy direction abroad with regard to accountability and graduate outcomes is similar to policy direction in Australia. Greater scrutiny will mean that assurance of graduate outcomes is likely to be more central to university operations. Of particular note is the mismatch between the seven common clusters of generic outcomes—the things that most universities say are important—and the gaps in how these are measured or judged. The Collegiate Learning Assessment (CLA) will provide (not uncontested) measures of students' written communication, critical and analytical thinking and problem-solving. As yet there are no sector-wide indicators to assure other common generic outcomes (bolded):

1. Written and oral communication
2. Critical and analytical (and sometimes creative and reflective) thinking
3. Problem-solving (including generating ideas and innovative solutions)
4. Information literacy, often associated with technology
5. Learning and working independently
6. Learning and working collaboratively
7. Ethical and inclusive engagement with communities, cultures and nations.

Measurement of these outcomes is uncommon because, as reported in the literature, it has been found to be difficult, time-consuming or impossible. There is an urgent need to find new, efficient and effective ways of judging and warranting these generic outcomes.

A key finding in the projects and fellowships considered in this guide is that outcomes are best contextualised and embedded in the disciplines. Students are likely to be more engaged in acquiring oral communication skills in order to be an effective and employable pharmacist, for example, rather than giving yet another oral presentation for its own sake. Teaching staff are also likely to be more engaged if time invested in enabling students to achieve generic outcomes contributes to the future of associated professions and effective citizenry.

The plethora of projects related to this theme attest to its importance, but sometimes also confirm universities' tendency to 'reinvent the wheel'. The 54 projects and fellowships were categorised according to their substantive focus against key points of the ADRI quality assurance model (Approach, Deploy, Review, Improve). Forty-six projects and fellowships were assigned in this way.

Figure 1 shows a snapshot of where resources have been applied so far. Even though crude, the Figure suggests what is confirmed in a reading of the project and fellowship summaries. In relation to assuring graduate outcomes, much effort has been expended determining the appropriate graduate outcomes within courses and disciplines. It is probably time to agree that most common generic outcomes across disciplines fall roughly within the seven clusters suggested here. They are similar to the most desired outcomes in other sectors within and beyond Australia.

**Recommendation 1**: In future initiatives, fund fewer substantive studies that primarily explore the nature and meaning of graduate attributes or generic outcomes.
Many of the projects and fellowships considered in this guide focus on graduate attributes in general rather than any in particular. There is a wealth of literature on how to develop and assess some (written and oral communication and critical thinking, for example), and very little on others (ethical engagement, for example).

**Recommendation 2:** In future initiatives, focus on assuring outcomes such as working and learning independently and collaboratively, creative and reflective thinking, digital literacy, and civic and ethical engagement.

Many of the discipline-based projects considered here focus on relatively new disciplines, many of which are more generalist and interdisciplinary in nature. A few also focus on assuring graduate outcomes for students of diverse cultures. There appears to be further work needed in these areas.

**Recommendation 3:** In future initiatives, focus on assuring outcomes for graduates of interdisciplinary courses, and graduates from diverse contexts.

Figure 1 is based on emphases related to generic outcomes, not standards of outcomes. To date, apart from the LTAS project, little appears to have been done to articulate standards of generic outcomes in Australia.

**Recommendation 4:** In future initiatives, focus on assuring standards of graduate outcomes.

Knowing what the important outcomes are, and at least the minimum standard, is the first step. The second step, equally important, is to know where those outcomes and standards are developed and assessed in the curriculum. Many projects summarised here have attempted to map attributes in curricula, and Australian universities are increasingly building course mapping into their quality assurance
processes. Mapping the intended curriculum has its limitations; nevertheless, it provides a lens through which to view the curriculum as it is experienced by students. However, simple grids showing where outcomes are taught, practiced or assessed have been found to be time-consuming to generate and of limited value. Busy academic staff should spend time on using the results of course mapping, rather than on providing crude ‘tick and flick’ data to generate such analyses. Digital information systems that aggregate unit and course information present opportunities for richer qualitative and quantitative aggregations of the intended curriculum. Such systems could also provide intelligence as to where and how standards in generic outcomes are developed and assessed.

**Recommendation 5:** In future initiatives focus on creating or disseminating more sophisticated digital curriculum mapping or course aggregation systems that can be shared across and between institutions.

The real gaps identified in this consideration of projects and fellowships are related to evidence of achievement of outcomes, and strategically using that evidence to improve (perhaps in benchmarking or similar activities).

**Recommendation 6:** In future initiatives, focus on ways of providing evidence (either through measurement or judgement) of the achievement of standards in generic outcomes.

The vast majority of projects and fellowships pertain to one discipline or, more often, to a few institutions. These more local initiatives can provide opportunities for smaller scale change. As seen in this guide, there are sometimes few products from such initiatives that can be scaled up, adopted or re-purposed. In contrast, sector-wide initiatives built on strong consortia of institutions can be an effective way to effect wide-scale change because they are pre-set to produce outcomes adaptable and re-useable at more institutions.

**Recommendation 7:** In future initiatives, maintain a balance between smaller and larger projects, but prioritise those initiatives more likely to produce re-useable and scalable products.

One of the excellent features of the projects and fellowships considered here is extensive engagement with industry bodies, professional associations and the wider community. Several projects led directly to the formation of such bodies. Such engagement is likely to lead to more sustainable change and improvement. However, to date there appears to have been little focus on community engagement initiatives such as volunteering, service learning and others beyond the formal curriculum that are known to enhance achievement of generic graduate outcomes.

**Recommendation 8:** In future initiatives, continue to focus on ways to work in partnership with industry and professional bodies, and focus more on community engagement initiatives with the potential to improve generic graduate outcomes.
Conclusion
Much good work has been completed and much remains to be done. New sector-wide initiatives (included here) provide opportunities to refine ideas, systems and tools that can assist busy teaching staff to be very clear about the outcomes their graduates need; adopt and adapt tools and processes from peers within and beyond their disciplines to develop and assess those outcomes; and use richer measures and judgments of achievement to inform improvements in strategic ways. Highly motivated teaching staff have and will continue to provide challenging and engaging learning experiences for students. Curriculum leaders spend countless hours aligning outcomes, assessments and experiences. These teaching and curriculum inputs are essential but insufficient. A most pressing challenge is to find increasingly rich and transparent ways of warranting graduate achievements, and at the same time ensure that graduates themselves are assured of their capabilities.
Literature review of Australian and international scholarly research and publications

Introduction

In recent years there has been a rapid shift from teacher-centred to student-centred teaching and learning practices in higher education, and this has meant a much greater focus on student learning outcomes (Huba & Freed, 2000; Mentkowski, 2000) to the point that ‘learning outcomes’ is a frequently-used term in all sectors, including higher education. The recent strengthening of the Australian Qualifications Framework, for example, indicates that qualifications must be designed to enable graduates to demonstrate learning outcomes expressed as knowledge, skills and the application of knowledge and skills (Australian Chamber of Commerce and Industry, 2007). Graduates complete courses, and course outcomes are a mix discipline specific knowledge outcomes (pharmacy knowledge) and generic skills and qualities (those required to be an effective pharmacist and an engaged citizen). The latter are commonly referred to as graduate attributes in Australian higher education. In the current climate, conversations about graduate outcomes (discipline or generic) often include reference to expected levels of achievement (standards).

This literature review attempts to capture key ideas and developments within and beyond Australia in relation to graduate outcomes and standards, and how they are assured based on an ADRI assurance framework. ADRI signifies Approach (mission, vision and values eg an institution’s philosophy of teaching and learning), Deployment (how this is operationalised), Review (measuring achievement of success) and Improvement (strategies for continuous improvement) (Woodhouse, 2003). Similar models have been described for curriculum enhancement to assure graduate outcomes. Ewell, for example, uses the following descriptors to communicate phases similar to the fellowship framework: Abilities, Alignment, Assessment and Action which “together will give us the right kind of Accountability” (Ewell, 2004). The National Institute for Learning Outcomes Assessment’s (NILOA) Providing Evidence of Student Learning: A Transparency Framework is a recent iteration of a quality assurance framework (National Institute for Learning Outcomes Assessment, 2010). In the context of assuring graduate outcomes, key questions, as shown in Figure 2 are:

- What are the graduate outcomes and what is the appropriate standard of achievement?
- How are graduate outcomes developed and assessed?
- Do graduates achieve the outcomes at the appropriate standards?
- What strategies are used to improve the achievement of graduate outcomes?
1. What are the graduate outcomes and what is the appropriate standard of achievement?

Knowledge outcomes
Knowledge learning outcomes are the traditional domain of higher education. In Australia, the graduate outcomes of courses (i.e., course learning outcomes) are determined by the academic staff who teach the course (usually subject to an institution’s internal accreditation or review processes) within the framework of their institution’s philosophy of teaching and learning (which usually includes a statement of graduate attributes) as well as requirements from accrediting bodies, if applicable. Accreditation requirements may stipulate inputs (e.g., subjects to be taught), standards of delivery (e.g., number of staff, availability of facilities) or outputs (competencies to be demonstrated by graduates). Many courses must be accredited if their graduates are to enter the associated profession (e.g., nursing, accounting); other courses have the option to seek accreditation (e.g., public relations); and some courses are not accredited (e.g., media and communications).

Standards
In 2010, the ALTC Learning and Teaching Academic Standards (LTAS) project supported discipline communities to articulate threshold standards: the minimum learning outcomes a graduate must achieve including discipline-specific knowledge, discipline-specific skills including generic skills as applied in the discipline and discipline-specific capabilities (Australian Teaching and Learning Council, 2010). To date, threshold learning outcome statements are completed or underway in eight disciplines. At this stage, the future of the threshold learning outcome statements is unclear in relation to the Tertiary Education Quality and Standards Agency. Similar initiatives have been underway abroad: Harris summarises initiatives refining expectations of knowledge outcomes within subjects and disciplines, including the Tuning Process (Europe) which identifies threshold-level learning outcomes for a wide range of subjects, and the Subject Benchmark Statements (UK) wherein subject-specific statements of learning outcomes are part of the national quality assurance framework (Harris, 2009).

Generic graduate attributes
While much work has been undertaken to specify knowledge outcomes in subjects, as discussed above, on the whole, assessing and assuring discipline knowledge outcomes are generally less troubling to discipline specialists. However, in recent years, higher education has been required to also determine learning outcomes in more generic skills, attributes and competencies. In Australian higher education, these
are generally referred to as graduate attributes, and they have been a focus of considerable attention, debate, research and resourcing in Australian higher education for the past fifteen years (Barrie, 2004; Campbell, 2010; Hager, 2006). Much of the debate appears to be about nomenclature, how they can be contextualised and embedded in a discipline area, and taught and assessed by subject specialists who do not necessarily feel equipped for those tasks (Green, 2009; Radloff et al., 2009). The projects and fellowships considered here document the challenges of wrestling with graduate attributes or generic skills as learning outcomes in specific disciplines. Students enroll in discipline-based courses, and generic skills therefore must be embedded in a course and interwoven with the discipline and from the perspective of that discipline. The generic outcomes are therefore often inseparable from the discipline. For the purpose of this literature review, however, the focus will be on what institutions say they aim to achieve in terms of generic graduate outcomes: what those outcomes are, how they are developed, assessed and assured.

A scan of the sector
In preparation for this literature review, the websites of 39 Australian universities were investigated to capture approaches to graduate attributes (as at May, 2011). The vast majority (38) had easily accessible statements of attributes, and many also had policies on graduate attributes. This scan revealed some noticeable trends. First, although there is clear differentiation between universities, the graduate attribute statements include some very common outcomes, as has been noted elsewhere (Barrie, Hughes, & Smith, 2009; Radloff et al., 2009). The attributes common to most universities included applying knowledge in the professions, as well as generic skills in these broad clusters:

1. Written and oral communication
2. Critical and analytical (and sometimes creative and reflective) thinking
3. Problem-solving (including generating ideas and innovative solutions)
4. Information literacy, often associated with technology
5. Learning and working independently
6. Learning and working collaboratively
7. Ethical and inclusive engagement with communities, cultures and nations.

Very few universities failed to mention attributes associated in some way with these clusters. Other attributes mentioned less frequently were associated with leadership (eight universities), self-reliance and confidence (10), scholarly integrity (four) and numeracy (four). To provide a quick visual impression (rather than a scientific analysis) of the emphases in the statements, the ‘wordle’ in Figure 3 is based on the 50 most common words. It is based on universities' graduate attributes statements (not policies), and like words were altered to capture emphases (for example, ‘professions’ and ‘profession’ were changed to ‘professional’).

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1 Note that the inferences drawn from this scan are based on easily accessible information about graduate attribute statements or policies. Universities have practices, sometimes within faculties, which may not have been captured in this scan.
The seven common clusters of attributes found in this scan are echoed in other Australian initiatives:

- The Australian curriculum for K-12 includes general capabilities that apply across subject-based content and equip students to be lifelong learners able to operate with confidence in a complex, information-rich, globalised world (Australian Curriculum Assessment and Reporting Authority, 2010): literacy (includes communication); numeracy; information and communication technology competence; critical and creative thinking; ethical behaviour; personal and social competence and intercultural understanding (Australian Curriculum Assessment and Reporting Authority, 2010).

- The 2007 Graduate Employability Skills report (Precision Consulting, 2007) focused on the Employability Skills Framework (Department of Education Science and Training, 2002): communication, teamwork, problem solving, self-management, planning and organising, technology, life-long learning, and initiative and enterprise. The report suggests that ‘analysis of graduate attributes from a significant number of universities’ shows that employability skills, as outlined in the Employability Skills Framework, ‘may reasonably be seen as a subset of Graduate Attributes’ (Precision Consulting, 2007).

- A recent report from the Business Council of Australia highlights the skills required by industry: the capabilities which allow graduates to work as part of an international team collaborating with people from different backgrounds and cultures, as well as generic skills including communication, teamwork, problem solving, critical thinking, technology and organisational skills (Business Council of Australia, 2011).

Employability
It would be fair to say that learning outcomes in Australian higher education courses have become more attuned to industry needs and graduate employability in the past ten years (note the emphasis on ‘professional’ in Figure 3). Current graduate attribute statements make clear links with industry and the professions, and terms like work integrated learning and work-readiness appear to be quite prominent in statements of graduate attributes. There are similarities and differences abroad: in the United
Employability is a term used far more frequently than graduate attributes, notwithstanding that Yorke's widely accepted definition of graduate employability echoes many Australian universities' statements of graduate attributes. According to Yorke: "the skills, understandings and personal attributes that make an individual more likely to secure employment and be successful in their chosen occupations to the benefit of themselves, the workforce, the community and the economy" (Yorke, 2006). Employability has been operationalised with students through Personal Development Planning for many years (Strivens, 2007; Strivens & Ward, 2010). The following selected initiatives and reports highlight the emphases in desired generic capabilities and attributes:

- The UK Quality Assurance Agency's Subject Benchmark Statements define what can be expected of a graduate in terms of the abilities and skills needed to develop understanding or competence in the subject (Quality Assurance Agency, n.d.).
- Student Employability Profiles identify skills that can be developed through the study of a particular discipline based on subject benchmark statements. These are mapped against employer perceptions of the attributes of individuals who 'transform organisations and add value early in their careers' (Rees, Forbes, & Kubler, 2008).
- Future Fit: Preparing graduates for the world of work highlights the importance employers place on particular 'employability' skills (Confederation of British Industries & Universities UK, 2009) and
- Graduate Employability: What employers want highlights the top ten skills perceived as important in a survey of 233 UK employers (Archer & Davison, 2008).

In Europe, there has been a focus on tracking graduate destinations (Arthur, Brennan, & de Weert, 2007; Schomburg & Teichler, 2006) and as part of the Bologna Process, a focus on lifelong learning and employability (Bologna Process, 2010). As part of the Tuning process, a study was undertaken on the transferable skills or competences perceived as most important by graduates, employers and academics (Auzmendi, Beza-nilla, & Laka, 2008). Graduates and employers emphasised skills associated with analysis and synthesis, capacity to learn, problem solving, applying knowledge, adapting to new situations, concern for quality, managing information, working autonomously and teamwork. Academics' perceptions were similar, except they placed greater weight on basic general knowledge, and less on information technology (ICT) and interpersonal competences (Villa et al., 2008).

In the United States, the focus has been less on employability and more on generic outcomes associated with liberal and general education. In the wake of the Spellings Commission which heralded a move to standardised testing (Error! Hyperlink reference not valid.), initiatives such as the Association of American Colleges and Universities' (AAC&U) Liberal Education and America’s Promise (LEAP) explore public attitudes about the key outcomes of college in the twenty-first century. These are expressed as the 15 Essential Learning Outcomes (ELOs) (Association of American Colleges and Universities, 2004, 2005). Many of the ELOs are similar to the seven clusters indentified in Australian graduate attribute statements (although the ELOs also include Reading and Integrative learning). The AAC&U has more recently added investigations on employer perspectives through publications such as 'Raising the Bar: Employers' Views on College Learning in the Wake of the Economic Downturn' (Hart Research Associates, 2010). This attention to employability is less obvious in earlier AAC&U publications.
2. How are graduate outcomes developed and assessed?

While the move to an outcomes approach has not been without contention, it is generally agreed that sound learning outcomes are clearly communicated, observable, demonstrable and measurable (Baume, 2009). Considerable energy has been expended on determining the graduate learning outcomes, including graduate attributes, but even more has been needed to translate those statements into pedagogy within the disciplines. Alignment of learning outcomes with experiences and assessment is now widely regarded as fundamental to sound practice. This means that the intended outcomes inform the design of the learning experiences, and the assessment of the outcome (Biggs, 2007). In the UK, extensive scholarship particularly in relation to capability and employability has been led by Knight, Stephenson and Yorke (Knight & Page, 2007; Knight & Yorke, 2003; Stephenson, 1998; Yorke & Knight, 2006). In the US, prominent scholars on the assessment of learning outcomes include Mentkowski (and colleagues at Alverno College), Banta and Ewell (Banta, 2002; Ewell, 2004; Mentkowski, 2000). Key papers from the literature are available through the recently formed National Institute for Learning Outcomes Assessment, directed by George Kuh <http://www.learningoutcomeassessment.org/index.html>.

3. Do graduates achieve the outcomes at the appropriate standards?

Previous studies have found that evidence of achievement of graduate attributes is very difficult to gather, and proxy measures such as self-reported data, are often used (Barrie et al., 2009; Oliver, 2010b). The scan of universities’ graduate attributes statements and policies showed that universities use a range of language to communicate how the attributes are developed, assessed or assured:

- Some universities list the attributes without clearly indicating how they are developed or assured.
- Many state that *opportunities are provided for the development of* attributes within and beyond courses.
- Many state that *attributes are embedded in disciplines and courses* and assured through course review and accreditation processes.
- Some state that attributes are *assured through the monitoring of student evaluation mechanisms*.
- Several universities map attributes in courses, using more or less sophisticated systems.
- Some universities deconstruct attributes into subcategories such as knowledge, qualities and skills; others use the terms ‘capabilities’ or ‘qualities’ rather than attributes.
- Some statements distinguish between what can and cannot be warranted. James Cook University, for example, distinguishes between ‘graduate qualities to be fostered’ and ‘generic skills to be taught’. Others qualify the attribute, saying, for example that graduates will have an *awareness of ethical issues* rather than *demonstrate ethical behaviours*.
- A few universities have begun to delineate standards: CQUniversity, for example, includes levels of achievement (introductory, intermediate and graduate) within each attribute descriptor.
- Few universities appear to have a complete quality review process in place. However, Deakin University has a highly-developed cycle with these headings: identification of graduate attributes in course design, incorporation and assessment of attributes, communication and promotion to students, students' documentation of their attributes, program performance measures, review of the attributes and improvement cycle.
On a more macro level, there is much interest and contention within and beyond Australia on the perceived achievement of graduate outcomes. In 2007, the Business, Industry and Higher Education Collaboration Council (BIHECC) commissioned a report on how universities teach, develop and integrate employability skills into their programs of study, and how universities assess and report students’ employability skills (Precision Consulting, 2007). Reports from peak bodies continue to cite deficiencies in graduates’ capabilities or universities’ capacity to meet expectations (Business Council of Australia, 2011). Rather than lack of capability, however, this deficiency is likely to be a mismatch of expectations around standards of achievement. For example, concerns associated with graduate communication capabilities are more likely to be that the standard of graduate capability does not meet the standard expected by employers.

Policy directions and evidence of graduate achievement

While universities worldwide have been making the challenging transition to learning outcomes, national policy directions have changed rapidly. In Australia, the United States and the United Kingdom, there has been a shift to an evidence-based culture of accountability in higher education. Governments, the professions, business and the wider community increasingly require assurance of outcomes contingent upon qualification levels. There have been several initiatives aimed at calibrating degree standards. The Australian Qualifications Framework has been strengthened (Australian Qualifications Framework Council, 2011). In Europe, the Bologna and Tuning processes have focused on harmonising educational structures within the European Higher Education Area (Tuning Project, n.d.). In the United States, the Degree Qualifications Profile is an attempt to create similar parity (Adelman, Ewell, Gaston, & Schneider, 2011). In addition, government agencies are moving towards publicising datasets based on quantitative measures of broad national surveys and institutional statements. The Higher Education Funding Council for England (HEFCE), for example, is proposing that universities publish Key Information Sets which include indicators of student satisfaction with a course, the teaching, learning and assessment methods, fees and accommodation costs as well institutional statements about employability (Higher Education Funding Council for England, 2010). In the US, the Voluntary System of Accountability (VSA) is an initiative by public four-year universities to supply clear, accessible and comparable information on the undergraduate student experience through College Portraits. It often includes measures of learning outcomes drawn from the results of standardised testing which measures learning that is common (such as broad communication, critical thinking and analytic reasoning) (Voluntary System of Accountability, 2008). Expanding on this idea, the Organisation for Economic Co-operation and Development (OECD) is expanding on this idea and piloting the Assessment of Higher Education Learning Outcomes (AHELO) across diverse cultures and languages. AHELO aims to test what students know and can do upon graduation, in discipline-specific as well as generic skills such as critical thinking, analytical reasoning, problem-solving and written communication (Organisation for Economic Co-operation and Development, 2010). Moreover, the results will be used to measure the value added by institutions.

The Australian government has recently announced similar accountability initiatives. ‘Advancing Quality in Higher Education’ outlines the Government’s $1.3 billion quality agenda which includes developing, testing and implementing three new performance measurement tools: the University Experience Survey, the Collegiate Learning Assessment (CLA), and a composite Teaching Quality Indicator, the results of which will be included in the forthcoming My University website (Department of Education, Employment and Workplace Relations, 2011). Most pertinent to assuring graduate outcomes is the introduction of the CLA instrument which is designed to assess higher order thinking skills such as critical thinking, analytic reasoning, problem solving, and
written communication (Hardison & Vilamovska, 2009).

The mismatch between developed and measured graduate outcomes
The scan of graduate attributes statements suggests that generic outcomes are generally associated with seven areas, as shown in Table 1. The table also shows the national indicators by which graduate attainment can be gauged (note that the Collegiate Learning Assessment is not yet implemented, and the Course Experience Questionnaire Generic Skills Scale is self-reported data).

Table 1 Measures associated with common generic attributes in Australian universities

<table>
<thead>
<tr>
<th>Common generic attribute clusters</th>
<th>Collegiate Learning Assessment (yet to commence)</th>
<th>CEQ Generic Skills Scale (self reported data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written and oral communication</td>
<td>Written communication</td>
<td>The course improved my skills in written communication.</td>
</tr>
<tr>
<td>2. Critical and analytical (and sometimes creative and reflective) thinking</td>
<td>Critical and analytical thinking</td>
<td>The course sharpened my analytic skills.</td>
</tr>
<tr>
<td>3. Problem-solving (including generating ideas and innovative solutions)</td>
<td>Problem-solving</td>
<td>The course developed my problem-solving skills; As a result of my course, I feel confident about tackling unfamiliar problems.</td>
</tr>
<tr>
<td>4. Information literacy, often associated with technology</td>
<td>My course helped me to develop the ability to plan my own work.</td>
<td></td>
</tr>
<tr>
<td>5. Learning and working independently</td>
<td></td>
<td>The course helped me develop my ability to work as a team member.</td>
</tr>
<tr>
<td>6. Learning and working collaboratively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Ethical and inclusive engagement with communities, cultures and nations.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items from the good teaching scale (GTS), generic skills scale (GSS) and overall satisfaction item (OSI) are now considered to be 'core CEQ'. Since 2002, institutions can include scales such as the Graduate Qualities Scale (GQS) if they wish (Coates, 2006). The GQS focuses on qualities typically associated with university outcomes, especially attitudes and perspectives related to the relevance of the course for lifelong learning. For example:

- The course provided me with a broad overview of my field of knowledge.
- The course developed my confidence to investigate new ideas.
- University stimulated my enthusiasm for further learning.
- I learned to apply principles from this course to new situations.
- I consider what I learned valuable for my future.
- My university experience encouraged me to value perspectives other than my own.

Measuring or judging
Underlying the gaps in Table 1 is the contentious issue of measuring many of the attributes universities commonly say they wish their graduates to have. As shown in the Table, the CLA will be introduced in Australia and its intent is to measure and report written communication, critical and analytical thinking, and problem-solving. Whether generic skills can or should be measured in this way in a standardised test is the subject of much debate and attributing changes in levels of achievement to one factor such as a course is also highly questionable (Knight & Page, 2007; Yorke, 2008). There appears to be a shift in thinking in the literature from measuring to judging achievement, particularly in relation to generic skills and capabilities, and that judgements may be based on a broader range of evidence including self- and peer assessment within and beyond the classroom, as well as artefacts from formal assessment tasks. Yorke (2008) suggests asking students how they have met, through their work, the stated aims (perhaps attributes and standards) for their course. The student then makes a case using evidence which could include marks or grades, qualitative assessments of performance in work placements, and claims of unassessed
Richer evidence through portfolios
Portfolios and progress files are tools that enable students to assume responsibility for demonstrating evidence of their achievements within and beyond the curriculum, and interest and uptake of student portfolio systems has been increasing in recent years (Chen & Light, 2010; Hallam, Harper, Haувille, Creagh, & McAllister, 2009; Hallam, Harper, McAllister, Haувille, & Creagh, 2010; Hallam et al., 2008; Joint Information Systems Committee, 2008; Oliver, 2010a). Nevertheless, the challenges of implementing portfolio systems are well documented (Joint Information Systems Committee, 2006, 2008) and they include student engagement (Jafari, 2004). To build on their portfolio initiatives, some universities have begun to establish systems for warranting students' 'life-wide' activities associated with leadership, engagement, achievement or participation. These systems are usually elective and without cost to the student, and some are based on point systems. Awards of this kind have been increasing in number in recent years. The York Award (University of York, UK) was an early example. Other international examples include Birmingham University's Personal Skills Award and the Exeter Award (University of Exeter). In Australia, the University of New England has created such an award. These awards are typically managed by career or employability services, teaching and learning centres, or both.

Warranting other achievements
These institutional supplementary awards are designed to fill gaps that have also been recognised by governments. The European Diploma Supplement (European Commission Education and Training, 2010) has been created and agreed to by 48 European countries. It is designed to aid mobility and access to lifelong learning opportunities and promotes transparency of qualifications. Institutions produce the supplement according to a template jointly developed by the European Commission, the Council of Europe and UNESCO. It has eight sections including the qualification, its level and function; the contents and results gained; certification of the supplement; details of the national higher education system plus any additional information. Graduates receive the Diploma Supplement automatically, free of charge and in a major European language. It includes a precise and objective description of the competencies acquired during study, and fosters employability.

In a similar vein, the Burgess Report (Burgess, 2007) in the UK confirmed the inadequacy of the UK honours degree classification system, declaring that such a system that 'signs-off' a person’s education with a simple numerical indicator was at odds with lifelong learning and the need to do justice to the full range of student experience by allowing a wider recognition of achievement. The report signalled the need for radical reform, replacing the honours classification system with a more detailed set of information. The resulting Higher Education Achievement Report (HEAR) is intended to be the central vehicle for recording all university-level undergraduate higher education student achievement in UK institutions. The HEAR will be a single document that will capture more fully the strengths and weaknesses of the student’s performance. Core content will be common to all institutions, which will be free to add additional information as they desire and are prepared to verify.

Similarly, the Australian Higher Education Graduation Statement (AHEGS) (Department of Education, Employment and Workplace Relations, 2010) is the Australian equivalent of the European Diploma Supplement provided to graduates by the awarding institution in addition to the academic transcript. Like its European and UK counterparts, its purpose is to describe a qualification in an easily understandable way, and include descriptions of the nature, level, context and status of the studies undertaken as well as information about the education system to which the qualification
belongs. The AHEGS was implemented on a voluntary basis in 2008. It consists of five sections presented in the following order: the graduate, the award, the awarding institution, the graduate’s academic achievements and a description of the Australian higher education system. Two sections are pertinent to the assurance of graduate outcomes. Institutions may include the following information, although it is not compulsory:

- In section 2, the award, institutions may include a brief description of distinguishing features of the course, such as professional placements, industry-based learning, overseas study or work integrated learning.
- In section 4, the graduate’s academic achievements, institutions may include additional material such as workplace learning, institutional organised study abroad or independent overseas study credited to the award, major practicum or professional training placements, and assessed competencies or graduate employability skills. Individual achievements may also be included. These include: prizes; university or faculty medals; special distinctions; and university funded or outside funded scholarships based on academic merit. Only information that can be authenticated by the institution should be included.

4. What strategies are used to improve the achievement of graduate outcomes?

It is clear from the projects considered in this guide that universities expend enormous resources on strategies to improve graduate outcomes, but often in isolation. Comparing performance with a peer and using the results to improve (benchmarking) is a well-known strategy to improve quality. Higher education has been slow to adopt benchmarking, particular in teaching and learning where outcomes, including graduate outcomes, are difficult to measure (Coates, 2010; Oliver, 2010b; Stella & Woodhouse, 2007). National indicators, because of their limitations, can only be used to compare institutions and large courses based on proxy measures. Currently, for example, comparable measures of graduate success are usually drawn from completion data, self-reported CEQ Generic Skills Scale, and the Graduate Destination Survey (which reports graduate employment rather than employability). Analysis of marks and grades is equally unsatisfactory, since information about the tasks and levels used to derive the marks and grades is often inaccessible or adds confounding variables (Yorke, 2008). Nevertheless, quantitative data give the impression of measurement, and are therefore tempting. Doubtless new measures under construction will become new rulers by which to rank, another tempting process which locks competitors into an order without reference to a standard of achievement. Benchmarking based on richer qualitative evidence might produce more fruitful results.

Conclusion
This review builds on the extensive previous work in the field. The scan of the Australian universities’ graduate attributes suggests that apart from knowledge outcomes, generic attributes cluster in seven main areas. Few universities specify levels of achievement (standards) in these generic outcomes. The ALTC Learning and Teaching Academic Standards Project advanced the conversation about standards within targeted disciplines.

Assuring graduate outcomes, particularly the generic outcomes, is contentious and difficult. Nevertheless it is the heart of the enterprise in universities whose business it is to confer qualifications. Diplomas and degrees are designed to produce educated and
engaged citizens. They are also tickets to professions, careers and further study. Therefore, they are key to employability as well as a vehicle by which to ensure that graduates’ expectations are met.

Policy direction abroad with regard to accountability is similar to the Australian context. Greater scrutiny will mean that assurance of graduate outcomes is likely to be more central to university operations. Highly motivated teaching staff have and will continue to provide challenging and engaging learning experiences for students. Many universities now expend resources mapping curricula with tools of greater or less sophistication. Emerging business intelligence systems are likely to make this process more authentic and less onerous. Teaching and curriculum inputs are essential but insufficient. The most pressing challenge is to find increasingly rich and transparent ways of warranting graduate achievements, and at the same time ensure that graduates themselves are assured of their capabilities.
ALTC projects and fellowships completed: non-disciplinary
(The year at the end of each title is the year funded.)

Addressing the ongoing English language growth of international students (CG7-453) (2007)

This project investigates how to support English as second language (ESL) students to continue to improve their English language development. The project considers a range of issues beyond teaching and learning. They include: confidence, isolation and anxiety as well as motivation to learn English. The study sought to investigate the relationship between academic success and two factors affecting language development:

- language and academic learning strategy use and
- affective learning variables (e.g. motivation, anxiety, beliefs).

The project deliberately chose the title “English language growth,” a phrase not used in the literature, as a means to attract NESB students to the project. According to the project report, this strategy worked well with almost 800 international students providing data from five Australian universities through an online survey. Most respondents were young (80 per cent were less than 30 years old), from Chinese backgrounds and studying business and commerce. Just less than half were undergraduate (47 per cent); the remainder were postgraduate students (53 per cent). As the report notes, the study has certain limitations: given that those students with potentially the best English language skills were most likely to respond, those facing the greatest challenges are likely to be unrepresented. The findings suggest:

- learning strategies alone are not enough
- involvement in more active, integrated and social language learning environments shows a weak correlation with academic success
- cultural knowledge was important to understand English effectively
- daily use of English was crucial in the development of language skills.

Highlighted resources: The English Language Growth Resource website includes

- Resources for students (audio files explaining the screen content play automatically). There are five modules: Staying motivated about your English; Using your English; Studying in English; What your lecturers expect of you; Strategies for you to try (includes strategies for improving speaking, listening, reading and writing and developing vocabulary for better discipline understanding and information literacy).
- A resource for academics to assist with teaching and supervision.

Assessing students unfamiliar with assessment practices in Australian universities (PP5-43) (2005)

In response to the increasing number of International students within the Australian student cohort, this project aimed to determine how equivalency of student learning, assessment and the attainment of required skills can be ensured when taking into consideration different cultural and learning backgrounds. In particular, this project looked at the attainment of generic skills by students of accounting, domestically and at international sites. The study investigated teaching staff and employer perceptions about assessment and graduate quality. A key finding is that English competency of accounting students, as well as a different cultural background and learning preferences, may be the most important issues that impact on student
learning. Students’ level of English competency determined the extent to which those students understood lecturers’ expectations of them and their confidence (or lack of it) in completing the required assessment. Academic staff frequently do not use optimum forms of assessment to determine attainment of accounting generic skills; when they are used, they are gradually abandoned, owing to students’ poor English skills. Assessment requirements and expectations must be made much clearer, and it is extremely important to provide early and regular feedback to students on their progress. The findings indicate a need to:

- Consider this diversity as an opportunity to develop a truly global approach to educating accounting students.
- Recognise that improvements to accommodate one group of students inevitably lead to improvements for all students.
- Understand that students from different backgrounds value the opportunity to work with, learn from and contribute to richer understandings in the classroom.
- Appreciate that, in many cases, students are more likely to behave as individuals in their approach to learning and assessment rather than as a homogenous group, based on their cultural background.

**Highlighted resources:**

Inclusive Assessment: Improving learning for all provides a guide for assessment design with a focus on achieving graduate skills at the unit level.

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**Building course team capacity to enhance graduate employability**  
(CG8-735) (2008)

Graduate employability is the achievement of “the skills, understandings and personal attributes that make an individual more likely to secure employment and be successful in their chosen occupations to the benefit of themselves, the workforce, the community and the economy” (Yorke, 2006). Adopting this definition, this project aimed to build the capacity of university teaching staff to enhance the employability of their graduates. Outcomes include the **Graduate Employability Indicators (GEI)**: online employability surveys, usable by any course in any institution, designed to supplement employment data from national surveys (such as the Graduate Destination Survey). The surveys are administered at course (program) level, and capture the perceptions of a range of stakeholders:

- Graduate perceptions of the importance of fourteen capabilities to their early professional success, and the extent to which their degree contributed to the development of those capabilities;
- Employer perceptions of the importance of fourteen capabilities to new graduates' early professional success, and the extent to which new graduates generally demonstrate those capabilities; and
- Course team perceptions of the importance of fourteen capabilities to new graduates' early professional success, the extent to which new graduates generally demonstrate those capabilities, and their confidence teaching and assessing the fourteen capabilities.

The fourteen capabilities are drawn from the National Survey of Student Engagement in the US and the Graduate Pathways Surveys in Australia. They map to most universities’ **graduate attributes and generic capabilities**. Survey results can be used to inform curriculum review, professional development and benchmarking.

**Highlighted resources:**

The Assuring Graduate Capabilities website provides access to:

- comprehensive information about the Graduate Employability Indicators
- resources to assist teaching academics to enhance students’ employability
Developing pedagogical models for building creative workforce capacities in undergraduate students—Professor Erica McWilliam—ALTC Associate Fellow (2006)

This fellowship aimed to identify instances of pedagogical approaches that favour experimental, error tolerant engagement in learning, and a move away from content knowledge towards re-organising current knowledge into new paradigms. The fellowship included a study into academic perceptions on creativity and teaching creativity, a creativity showcase forum, and a monograph Preparing the creative workforce: how to launch young people into high-flying futures (2008). Findings from the fellowship highlight that whilst universities in Australia are committed, in principle, to creativity, it is not explicitly linked to teaching and learning practices. Furthermore, current practices of assessment and teaching and learning hinder the teaching of creativity. Innovative teaching of creativity is evident in Australian universities, but is the activity of individual champions.

Highlighted resources:
Creative Workforce 2.0
Teaching for creativity: Towards sustainable and replicable pedagogical practice

Enhancing undergraduate engagement through research and inquiry—Professor Angela Brew—ALTC National Teaching Fellow (2008)

This fellowship aimed to enhance student engagement in learning through supporting the development of undergraduate research and inquiry. The fellowship was predicated on research which has demonstrated the long term benefits of inquiry-based learning for students in developing certain attributes and for

- retention and progression particularly for non-traditional students such as women (in particular disciplines)
- recruiting and preparing students for postgraduate studies
- increased confidence, improved ability to apply knowledge and skills and the development of critical thinking and problem solving skills.

Analysis of the state of undergraduate research experience programs across Australian universities highlighted several key factors such as an increase in such research programs (1500-2000 students annually), a focus in science and engineering disciplines, the use of programs to increase higher degree student enrolments, a lack of formal evaluation of undergraduate research programs, funding issues and a lack of recognition of staff involved in overseeing programs.

Highlighted resources: The Undergraduate Research in Australia website provides access to

- a wealth of resources, including Ideas and Issues:
  - Why Engage Undergraduates in Research and Inquiry
  - Implementing Undergraduate Research and Inquiry
  - Some Definitions
  - Assessment of Student Work
  - Evaluating Undergraduate Research and Inquiry
- Undergraduate Research Experience: Program in Australian Universities (2010), an overview of current practice and funding opportunities for inquiry-based learning
- A newsletter: Undergraduate Research News Australia
ePortfolio use by university students in Australia: informing excellence in policy and practice (PP7-535) (2007)

This project examined the use of ePortfolios by university students in Australia. Its goals were to: provide an overview and analysis of national and international ePortfolio contexts; document the types of ePortfolios used in Australia; examine the relationship with the National Diploma Supplement project funded by the Federal government; identify any significant issues relating to ePortfolio implementation; and offer guidance about future opportunities for ePortfolio development. An audit of educators, academic managers, and human resources staff provided information about current practice, while a series of focus groups and semi-structured interviews amplified some of the key issues raised in survey responses. Student surveys shed light on initial expectations and subsequent experiences of ePortfolios. The findings show a high level of interest in the use of ePortfolios, particularly for their potential to help students become reflective learners conscious of their personal and professional strengths and weaknesses, as well as to make their existing and developing skills more explicit. The project identified four contexts where strategies may be employed to support and foster effective ePortfolio practice: government policy; technical standards; academic policy; and learning and teaching.

Highlighted resource: Australian ePortfolio toolkit

ePortfolio use by university students in Australia: developing a sustainable community of practice (PP8-1010) (2008)

This was stage two of the Australian ePortfolio project. It aimed to specifically explore the current scope of national and international ePortfolio communities of practice in order to identify the factors that have contributed to their success and sustainability. It was designed to: support an ePortfolio community of practice; develop strategies to encourage interest in and engagement with community of practice activities; develop and promote resources to support the diverse stakeholders in ePortfolio practice; and collaborate in the establishment of a cross-sector ePortfolio community of practice.

Facilitating national benchmarking of achievement of graduate attributes and employability skills at course level—Professor Beverley Oliver—ALTC Associate Fellow (2009)

This fellowship aimed to encourage course leaders from universities across Australia to engage in benchmarking partnerships with a focus on capabilities for graduate employability. The outcomes include the assurance of learning for graduate employability framework: a 360-degree evidence-based approach to curriculum enhancement which includes (1) determining the capabilities and standards; (2) knowing where they are developed and assessed by mapping the curriculum and (3) mapping WIL; gathering evidence that the capabilities are achieved at the appropriate standards in (4) student portfolios and (5) course review portfolios, then (6) benchmarking with similar courses.

Highlighted resources: The Assuring Graduate Capabilities website enables access to: capabilities proforma (for mapping graduate attributes and professional competencies); standards rubrics for articulating course-wide standards in generic skills; curriculum mapping tool information and user guide; information about student portfolios; course portfolios (and links to course review and business intelligence systems); benchmarking with a focus on graduate employability information and user guide.
Increasing institutional success in the integration and assessment of graduate attributes across the disciplines by identifying academic staff beliefs about graduate attributes (G17-638) (2007)

Also known as the B Factor, this project investigated academic teaching staff’s beliefs about graduate attributes, including:

- the relevance and importance of graduate attributes in the disciplines
- how graduate attributes are best taught and assessed, and
- their confidence and openness to teaching and assessing them.

The findings suggested that:

- Academics were familiar with their university’s list of graduate attributes and thought they were an important focus.
- Personal expectations or views were identified as being most influential on staff having confidence to teach and assess certain attributes
- Levels of confidence varied depending on the attributes:
  - academics were most confident with critical thinking, problem solving and written communication
  - academics were least confident with teamwork, information literacy and communication technology
  - oral communication, ethical practice and independent learning took the middle ground.
- Discipline made a difference to the attributes emphasised in teaching and assessment
- Gender, industry experience and familiarity with the university all influenced whether staff were likely to emphasise graduate attributes in teaching and assessment
- Academic staff were likely to hold one of four beliefs about graduate attributes: enthusiast, agreeable, sponsor or sceptic.

The data informed the development of a framework for institutional change strategies to enhance integration of graduate attributes in Australia, regardless of the discipline. Academics were more likely to believe that graduate attributes were most effectively developed when they are integrated in the curriculum and taught by the discipline teacher and a specialist with skill in the relevant attribute, or taught by the discipline teacher and/or through WIL experiences. They were least effectively developed when they were integrated into a capstone course or developed by students independently.

Highlighted resources: The project report includes:

- A framework for institutional change strategies to enhance integration of graduate attributes (Chapter 5)

Integration and assessment of graduate attributes in curriculum (G17-633) (2007)

Also known as the National GAP, this project aimed to reinvigorate the implementation of graduate attributes at Australian universities through a community of practice of discipline experts and teaching and learning leaders, and facilitate a more complex, scholarly and critical understanding of graduate attributes, their attainment and assessment. Graduate attributes are defined in this project as an “orienting statement of education outcomes used to inform curriculum design and the provision of learning experiences at a university” (Barrie, Hughes and Smith, 2009, p1). The project aimed to create processes for assessing whether or not attributes are achieved, working on the basis that whilst all Australian universities make claims for graduate attributes few,
(if any), can provide convincing evidence that they have been achieved through curricula. All Australian universities also participated in one or more of the three phases of national symposia to develop the Graduate Attributes Project (GAP) framework which enabled the establishment of the community of practice.

**Highlighted resources:**
- **Eight Issues papers** (interacting elements which affect an institution’s efforts to foster curriculum renewal to achieve graduate attributes): conceptions, stakeholders, implementation, curriculum, assessment, quality assurance, staff development and student perception.
- **Searchable database** of universities’ graduate attribute statements (2009).
- **Graduate attributes implementation strategies**, including a post-it wall and scenarios.

**Supporting student peer assessment and review in large groupwork projects (PP6-49) (2006)**

The project developed and disseminated an online tool (TeCTra—Team Contribution Tracking System) to facilitate **peer assessment** in large groupwork projects, typically in capstone units. The tool is designed to alleviate issues related to groupwork by providing a mechanism by which students can reflect and review their own and their team’s performance in a non-confrontational manner. Similarly, the program gives students the opportunity to provide professional, well articulated and justified judgements on peers’ performance, thereby **developing core generic graduate attributes such as communication, critical thinking, professional behaviour and teamwork**. The TeCTra tool enables academics to provide formative and summative assessment in a relatively simple and time saving fashion by calculating weighted contribution factors for each student. It gives a more accurate assessment of student contribution within a large group project. The online tool utilises peer learning with an emphasis on assessment and generates quantitative and qualitative comments.

**Highlighted resources:**
TeCTra—Team Contribution Tracking System

**The role of honours in contemporary Australia (G17-634) (2007)**

This project aimed to address a gap in educational research by mapping the variations of Honours in Australian higher education. Responding to key concerns about Australian Honours degrees, such as whether Honours is an adequate benchmark for PhD scholarship allocation, the project mapped variations in respect to: the use of the term Honours, institutional and disciplinary contexts, structure and curricula, enrolment, pedagogy, resourcing, outcomes and evaluation. The project found that Honours was a pressing area for higher education policy and practice with the potential to have a major impact on the quality of learning and teaching. Concerns about **standards** in Honours focused on the equivalence of First Class Honours in the distribution of PhD scholarships rather than pedagogical dimensions. **Graduate attributes** for Honours tended to be focussed on research training, advanced disciplinary knowledge, and the production of a substantial independent research thesis.

**Highlighted resources:**
The most common graduate attributes of Honours degrees: project report (p.16)

This project was a first national scoping study of work integrated learning (WIL) which is defined as ‘an umbrella term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum.’ The decision to apply a broad definition was informed by a desired to forge new perspectives and establish an ongoing commitment to the improvement of WIL curricula. The project report notes that four of the nine recommendations in the Business, Industry and Higher Education Collaboration Council (BIHECC) report on graduate employability propose WIL as a mechanism to develop graduate attributes and employability skills (p.3). Participants in the scoping study clearly identified that motivations for engaging with WIL are strongly centred on the educational benefits for students including the development of graduate attributes or generic skills and opportunities for students to engage with the professional identity of their discipline (p.17). The project aimed to identify issues and map a broad and growing picture of WIL across Australia and to identify ways of improving the student learning experience in relation to WIL. Work-integrated learning is generally viewed as an enabler of work-ready graduates. Significantly, many universities now include WIL goals in institutional strategic plans. Using a stakeholder approach, the project consulted with students, academics and university professional staff, employers, professional associations and government as a means to develop recommendations and an implementation framework to inform, rather than drive, policy development. The project identifies key challenges experienced by those ‘on the ground’ delivering quality WIL experiences. However, by its own admission, this is limited owing to the sample size and distribution of data. The framework provided aims to identify the need for future work and research in this area and is predicated on the idea that a collaborative stakeholder approach must be present due to the essential nature of mutually beneficial partnerships in developing successful WIL initiatives. The project raises key overarching issues relating to the implementation of WIL and the framework is a useful guide for academic leaders to think through the complexities of initiating university-wide WIL targets.

Highlighted resource:
The WIL [Work Integrated Learning] report: A national scoping study
Assessing and assuring Australian graduate learning outcomes: principles and practices within and across the disciplines (SP10-1879) (2010)

A set of principles for the assessment and assurance of graduate learning outcomes will be the major project outcome. In addition, examples of authentic disciplinary practice and summaries of key project stages will be produced to serve the dual purposes of project consultation activities and post-project dissemination. A comprehensive and inclusive data-gathering process will ensure that all project outcomes reflect the views and practices of a diverse range of key stakeholder groups: professional accreditation agencies, employers, institutional leaders, coordinators and administrators, and students. The early focus on consultation will ensure that recommendations are grounded in the practices of the disciplines, and generate the vignettes. (More)

Assuring graduate capabilities: evidencing levels of achievement for graduate employability—National Teaching Fellowship, Professor Beverley Oliver (2011)

Conversations about graduate capabilities inevitably turn to standards: academic staff, business and industry, the community, students and graduates seek clarity on the level of achievement required for safe practice and professional readiness. Course (program) leaders, students and industry partners are often guided by predetermined lists of generic attributes, professional competencies and outcomes. However, many seek clarity about the level of performance required during the course, at graduation and beyond (for example, how well a journalist or pharmacist is expected to be able to communicate at graduation). In addition, in an increasingly evidence-based culture, the sector is seeking new ways to assure the achievement of such standards. This fellowship proposes to engage curriculum leaders of undergraduate courses from any discipline to work with their colleagues, industry partners, students and graduates to: define course-wide levels of achievement in key capabilities, articulated through standards rubrics; implement strategies to evidence student achievement of those standards (through student portfolios and course review processes, for example); share the validity, challenges and opportunities of such approaches through scholarly publications. Colleagues are encouraged to access an introduction to these concepts and join a community of practice and scholarship. (More)

Hunters and gatherers: strategies for curriculum mapping and data collection for assuring learning (SP10-1862) (2010)

Assurance of learning is a predominant feature in both quality enhancement and assurance in higher education. It involves making program expectations and standards explicit, then systematically gathering, and interpreting evidence to determine how well performance matches those expectations. This benefits the institution, ensuring program aims are evaluated and used for program development, and is important for external scrutiny (AUQA, TEQSA, professional bodies). This project aims to investigate two elements of assurance of learning: (1) mapping graduate attributes throughout a program; and (2) collecting assurance data. It will conduct an audit across disciplines
subject to accreditation in Australian universities to evaluate current methods of mapping graduate attributes and their impact on the curriculum, and also the systems used to collect and store data. This information will be critically analysed to develop strategy on curriculum mapping and data collection. It will draw upon the use of existing software packages (e.g., SOS - mapping; ReView, SPARKPLUS collection) to support the efficient and effective implementation strategies. (More)
Architecture and building


This project aimed to investigate academic standards within urban and regional planning with a focus on practice education. Taking a participative and collaborative approach the study engaged key stakeholders of planning practice education. The project design involved a national scoping and review of planning practice education for 43 accredited undergraduate courses; and an empirical study into the views and experiences of planning educators, practitioners and students. In the area of planning education, despite accreditation, there has not been the development, implementation or dissemination of academic standards for WIL. One of the key premises of the project is that WIL is crucial to the development of planning practitioners as it provides an opportunity to close the gap between theory and practice. The project aimed to:

- Generate knowledge about the current status in Australia of planning practice and assessment
- Identify the factors which impede or facilitate the development of a shared understanding of academic standards in planning practice education
- Present key models and theoretical perspectives for understanding and applying academic standards and related assessment in planning practice education
- Institute processes of change for the improvement of academic standards and assessment in planning practice education.

The accrediting body, the Planning Institute of Australia (PIA), encourages the inclusion of professional work experience, although it was not a requirement at the time of the project. At the time of the study, only nine of 43 tertiary institutions had structured work practice as a formal component. The project recognises the impact of the interplay between different issues and agendas on the achievement of academic standards, and the key role of assessment in this process. The project encourages a sophisticated appreciation of academic standards in the learning and teaching process. Furthermore, the project demonstrates an understanding of the complexities involved in ensuring the quality of placements and of appropriate and authentic assessment to measure deep learning. As part of the project outcomes, potential assessment frameworks for structured work placements are provided as well as principles to guide the enhancement of assessment practices and academic standards.

Highlighted resources: The project report includes scholarly analyses which may be of use in other disciplines, particularly:

- Chapter 3.4 Professional Practice Capability, Pedagogy and Situated Learning and
- Chapter 6 Enhancing Assessment Practices and Academic Standards
Identification of teaching and instructional issues and opportunities for the architecture and associated disciplines (DS6-606) (2006)

This project was a study of architectural education and a detailed overview of architectural schools, academics, curricula and students in Australia, New Zealand and Papua New Guinea. The project explores four stakeholder groups: accreditation bodies, architectural practices (employers), community (includes students and their parents), and universities. The changing expectations of these stakeholder groups have had a considerable impact on architectural education over the last two decades and the report argues that accreditation requirements have had a significant impact, so much so that architecture schools are differentiated more by their location than the curriculum or teaching practices. The report provides a significant profile of architectural schools, including the curriculum (weighting, trends and accreditation) and the teaching and learning environment (challenges, design studio, assessment). In terms of graduate attributes and employability, the rise of generic skills in universities is perceived as having a negative effect on core skills which academics rated as the most important attributes. In relation to the transference of skills to students, a reduction in fractional teaching staff (due to salary and employment disparity between university appointments and architectural work) has meant that one of the main conduits for the transference of architectural practice is reduced. This report also suggests that architectural graduates are initially paid less as they are not seen as fully competent and need to complete an internship to be work-ready.

Highlighted resources: The project report includes scholarly analyses which may be of use in other disciplines, particularly:
- Chapter 6 The Curriculum (including 6.1 Mapping Curriculum Content) and
- Chapter 7 Teaching and learning Environment, especially The Balance Between Core Skills and Generic Skills (p.130)

Identification of teaching and instructional issues and opportunities for the construction management, quantity surveying and building disciplines (DS7-618) (2006)

This project sought to identify the challenges and opportunities for teaching and learning within the disciplines of construction management, quantity surveying and building surveying. The project is a scoping study that provides an overview of the challenges the discipline is currently facing such as: the generalist nature of many of the degrees (in contrast, for example, with structural engineering), and the constraints on curricula imposed by a complex number of varying accrediting professional institutions and industry. The project develops 14 recommendations and many of these reflect common issues facing the higher education sector such as a reliance on sessional staff, succession planning, funding shortages, the need for increased emphasis on WIL, Gen Y student profile and demands on student time due to work pressures (as most combine work and study). The relatively new discipline of construction education, however, has particular challenges less apparent for those more established (e.g. architecture or engineering). These include: a need for streamlined accreditation processes, fragmented and overcrowded curricula, a lack of recognition, status and understanding of the field by university management, and a lack of a teaching and learning community and associated organisations. WIL is proposed as a solution to issues around graduate employability and to resolve the tension between the demand for vocational skills by industry and a more theoretical focus traditionally provided by tertiary studies.
Professional education in built environment and design (DS7-615) (2006)

The project aimed to identify, research, review and scope the key issues facing built environment (quantity surveying, construction management, project management, property economics, spatial science, planning, civil engineering) and design (architecture, interior design, industrial design, landscape architecture) education across the sector, starting with five participating universities. The project identified three research questions:

1. How is built environment and design education currently configured to ensure the work readiness of graduates for working life in the professions? In this, what works well?
2. What are the professional futures of graduates for built environment and design?
3. What do programs and learning and teaching initiatives need to ensure work-readiness of graduates?

Significantly, the emphasis on professional education and employability is supported by the inclusion of a number of professional partners including GHD, Hassell, Woods Bagot, and Sinclair Knight Mertz. The project used a stakeholder approach, also engaging with new graduates of Built Environment and Design (BED) disciplines and academic staff. Focusing on the quality of the transition-to-work experience the study found that higher-order graduate capabilities (such as, judgment, critical enquiry and strategic thinking, and emotional intelligence) were stressed by all stakeholders. According to the study, effective transition-to-work is supported by authentic undergraduate experiences (on and off campus). Furthermore, the study found that academics of BED were relatively silent on issues relating to work readiness and standards, which was of concern given the national attention currently given to outcome standards. The silence, the report argues, is a symptom of a lack of discussion rather than implicit agreement. The project identified three recommendations:

1. a national good practice guide and network to help ensure that the transition-to-work of BED graduates
2. a national conversation about transition-to-work for BED graduates to help shape policy and practice
3. development and implementation of a range of transition-to-work strategies

Highlighted resources: The project report includes scholarly analyses which may be of use in other disciplines, particularly:

- 2.2 Defining graduate capabilities and
- Chapters 3 and 4 Stakeholder surveys of the importance and demonstration of graduate capabilities

Engineering and related technologies

Ensuring the supply and quality of engineering graduates with attributes for the new century (DS6-605) (2006)

This project aimed to determine the factors to ensure Australian universities produce a diverse supply of graduates, in a sustainable manner, with the appropriate attributes
for professional practice within an international, competitive context. According to the project report, a streamlining of the accreditation process has resulted in an increasing emphasis on graduate attributes in first-degree engineering programs. Of the ten graduate attributes identified, some are easier to embed than others but, overall, success seems more likely where the curriculum and assessment have been strongly aligned with the particular attribute. The employers consulted in the study, indicated that the softer generic skills—such as written and verbal communication skills, and teamwork—are better demonstrated in current engineering graduates. The report provides six recommendations to ensure Australian engineering education remains competitive and to counter the challenges the discipline faces. They include:

- Clarify the educational outcomes and standards required for practice at internationally recognised levels of engineering
- Develop and share best practice engineering education to ensure the required outcomes and reduce student attrition
- Promote stronger collaborative links with industry.

Engineering science and practice: alignment and synergies in curriculum innovation—Professor Ian Cameron—ALTC Senior Fellow (2006)

The fellowship focused on developing an understanding of three principal areas within engineering education:

1. Engineering education takes place in the space between theory and practice
2. The impact of new emerging practice forms on engineering into the future
3. Curricula strategies and processes—underpinned by an understanding of the theory/practice link—to produce **engineering graduates of the future**.

In particular, the fellowship is interested in the theory-practice landscape and the wide variety of spaces and places where engineering students encounter theory and practice. As part of the fellowship, Cameron developed a novel way of mapping those spaces into a curriculum diagram with a particular focus on how well those spaces are able to support the development of the desired graduate attributes for the emerging global engineer. These spaces (desk, studio, library, lecture, laboratory, plant, site, community, and regional practice etc.) are visually represented in terms of their relative size and time spent in them (time-distance scales). The graphical form presented is consistent with engineering culture and Cameron argues will appeal to engineering academics as a way to visualise the curriculum to imagine more innovative pedagogical approaches. He argues that the alignment of theory and practice with emerging learning spaces—combined with pedagogical considerations—are crucial to curriculum design and delivery. As part of the fellowship outcomes, there is a focus on active learning, project work, and peer teaching and significant networks have been developed (nationally and internationally) to extend the dialogue on innovating engineering education with consideration for the changing nature of engineering practice (e.g. the influence of data-centric and model-centric paradigms).

Highlighted resources:

- Synchronized resources (audio, video and slides) are available at Engineering Education Futures Forum 2008 http://www.altcexchange.edu.au/engineering-education-futures-forum-2008-2-outcomesand-activities

Responding to increasing pressures from industry, professional bodies and universities for engineering faculties to embed graduate attributes, this project aimed to investigate and address the teaching and assessment of graduate attributes in Engineering in the face of three inter-related challenges as noted in engineering education literature:

1. Innovations in teaching and learning and embedding graduate attributes tends to be isolated and short lived.
2. Rigorous evaluation of the impact on student learning of graduate attributes is rare
3. Pressures to align engineering graduate attributes with university generic attributes proves difficult, as university attributes do not align well with the realities of engineering practice.

Embedding attributes in the curriculum requires singular vision and commitment. Outcomes include:

- the development of a model for mapping attributes as part of an ongoing curriculum review process for engineering programs
- student perceptions of their learning of systems thinking (identifies the need for more authentic assessment to develop professional skills in this area)
- processes and tools for undertaking engineering curriculum review
- academic perceptions of the challenges associated with embedding graduate attributes in engineering curriculum.

Highlighted resources:

- Engineering graduate capabilities continuum: a continuum of learning outcomes
- Engineering Curriculum Review: process overview

Health

Curriculum development and assessment of methods to enhance communication and life skills in veterinary students (PP7-340) (2007)

This project focused on improving veterinary graduate employability, specifically communication skills, through targeted resources for use in veterinary curricula. The project attempts to fill a gap in veterinary curricula (nationally and internationally) by addressing the need for veterinarians to be able to communicate effectively with their human clients. Traditionally, veterinary studies have focused on knowledge and skills related to working with animals and have failed to appreciate and understand the importance of the human-animal bond and the need for skills in communicating with clients to achieve the best outcomes for their animals. The project aimed to:

- Provide educational tools to develop clinical consultation and communication skills using electronic and live simulation client scenarios
- Provide strategies to assess and apply Human (Client)-Animal bond in consultations
- Provide strategies to enhance and assess competency in communication, emotional intelligence and selected life skills; and methods of reporting this (including an electronic portfolio).
The project rationale was based on feedback from both veterinary registering boards and employers of veterinary graduates that noted the importance of communication skills within the undergraduate curriculum.

**Highlighted resources**

*The Learning and Teaching Guide: A handbook to support institutions in implementing programs for assisting the development of communication and life skills in veterinary students* includes lesson plans, assessment tools and supporting materials.

Developing interprofessional learning and practice capabilities within the Australian health workforce—a proposal for building capacity within the higher education sector (G17-637) (2007)

This project addresses interprofessional education within the Australian higher education sector and its role in producing **graduate health professionals able to meet workforce needs** in the crucial area of health provision. Specifically, the project aims to increase the capacity of the sector to graduate health professionals who have acquired well developed **interprofessional capabilities** by describing current interprofessional education (IPE), interprofessional practice (IPP) and interprofessional learning (IPL) in Australia and identifying a national research and development agenda that takes into account key workforce issues. Building a health workforce that can work more effectively in **team-based, interprofessional and inter-disciplinary practice** to deliver safer, sustainable, more effective, patient centred health services requires that students must be provided with IPE learning experiences. Changes to health care such as an increased need for enhanced community roles and greater cooperation between health professionals in patient assessment and management have led to an emphasis on interprofessional learning within the health professions. Interprofessional learning, however, presents certain challenges. Discipline bias, for example, is a barrier to successful IPE and, significantly, IPE also demands philosophical changes to educational norms and traditions. As a consequence, there tend to be pockets successful innovative IPE practice across the sector (usually the result of local champions), which is neither sustainable nor able to meet workforce needs. The project provides four national development areas, eight associated actions and two enabling strategies to achieve increased IPE, IPP and IPL.

**Highlighted resources:**

The Australasian Interprofessional Practice and Education Network includes a wealth of resources, and an active network of individuals, groups, institutions and organisations committed to researching, delivering, promoting and supporting interprofessional learning, through interprofessional education and practice, across Australia and New Zealand.

Ensuring quality graduates of pharmacology (DS7-621) (2007)

This project aimed to undertake a national survey and conduct structured interviews and consultations with stakeholders with a view to identifying resources, needs and priorities, including **generic graduate attributes**, defining minimal pharmacological knowledge in professional degrees and informing curricula development. The project findings indicated that there was a diversity of opinions as to what defined the discipline of pharmacology. Part of the project’s study was a national survey of students, asking the question “Does pharmacology teaching **adequately prepare graduates for their chosen career**?” Students perceived pharmacology as relevant to their chosen career and preferred practicals and tutorials over self-directed learning and computer assisted
learning. Wet labs were also deemed very useful and relevant. It should be noted, however, that overall, response rates were sometimes quite low.

Facilitating the integration of evidence based practice into speech pathology in Australia (DS7-611) (2007)

The primary aim of this scoping project was to develop a clear understanding of the current state of evidence based practice (EBP) teaching and learning in Australian speech pathology programs. The project explored both academic and clinical teaching and learning contexts. Based on the literature that demonstrates that novice clinicians find clinical decision making skills challenging to develop, the project assumes that EBP bridges academic and clinical curricula and should form the basis for clinical decision making. Using an action research methodology, the project found that there were strengths and gaps in existing practices. Strengths included: academic staff and clinical educators are positive about EBP having had training and access to relevant resources; EBP is assessed and considered in curriculum design and educators use a variety of processes to teach EBP. Gaps included dissonance between knowledge and action; for example, students found it easier to include EBP in academic assignments rather than real clinical settings.

Highlighted resources:
Evidence based practice resources online, as well as links to EBP resources (p.75 of the project report)


The project aimed to develop recommendations for revised competency standards for entry level occupational therapists (OT). The project undertook a scoping investigation to provide a basis for future directions, practice and scholarship within OT university education. Academics within the discipline navigate national, international and local registration requirements, cross-disciplinary research domains and diverse contexts for clinical practice in creating a coherent, research-led curriculum. There are also three key drivers of Australian OT curricula: the Australian Competency Standards for Entry-Level Occupational Therapists, the Revised Minimum Standards for the Education of Occupational Therapists (2002) and the home university’s generic graduate attributes. The project was intended to provide a timely investigation into OT competency standards. The project report provides detailed information on the results of the study involving the standards document (its relevance), suggested review timing (5 yearly), the format of the document and what should constitute entry-level competency. The majority of those involved in the online survey agreed that there was considerable compatibility between university graduate attributes and the OT discipline-specific competencies.

Meeting the challenges of clinical exercise science and practice: a collaborative university-industry approach (DS7-612) (2007)

Clinical exercise physiologists work with clients with chronic medical conditions. Exercise is now accepted by both the scientific and medical communities to be highly
therapeutic for those with chronic conditions and, in 2006, the federal Department of Health and Ageing formally recognised the entry of Accredited Exercise Physiologists (AEPs) into the domain of allied health to deliver Medicare-rebated services for those with chronic diseases. Due to this increased interest in, and recognition of, clinical exercise physiologists or AEPs the project aimed to address deficiencies both within the profession and across the higher education sector. The deficiencies in curriculum included the fact that practitioners are educated through courses designed in the 1990s, with a focus on working with healthy clients and athletes. The project aims included:

- Benchmarking the education and training of the Australian exercise physiologist (AEP) against established allied health professions
- Scoping gaps in curricula and clinical placements across the sector
- Developing new knowledge and competency accreditation criteria to propose to the Australian Association for Exercise and Sports Science
- Devising a strategy to align courses with the new accreditation system for individual practitioners
- Designing clinical practice guidelines and systems.

The 12 month project made considerable progress towards achieving its aims.

Highlighted resource:
project report appendices include a methodology for benchmarking courses


This project was the result of collaboration between nine Australian universities. The two major educational issues the project identified were:

- differences between industry and universities about what determines work readiness or road-readiness (in the case of paramedics)
- the need to identify a signature paramedic pedagogy drawing on a reference to Shulman (2005) who argues that graduates should bring a sense of personal and social responsibility (through integrity, ethical and responsible behaviour).

Paramedic education is relatively new to universities (1994) and the majority of teaching academics are experienced paramedics. Opinions differ between service providers and universities as to whether graduates should be work-ready or require internships to prepare for practice. Clinical placements are crucial to paramedic training yet opportunities are limited, variable, costly, and there was a great deal of competition with other health disciplines for placements. Transitional (mentoring and apprenticeship) structures to support graduates to become road-ready were found to be important. Within the project there is a strong emphasis on collaborative engagement between service providers and universities and the Australasian Paramedic Academic Network has been developed as a means to improve collaborative links and disseminate best practice learning and teaching within the discipline.

Quality indicators for best practice approaches to experiential placements in pharmacy programs (DS6-608) (2006)

This project mapped experiential placements including learning objectives, teaching and learning activities and assessment processes across pharmacy schools in Australia to highlight successful practices and to identify areas for improvement and quality indicators. The project sought to discover the value of placements in pharmacy
education, which have traditionally been seen as crucial, even though little research has been undertaken to determine their efficacy in preparing students for entry into the profession. Influences such as an ageing population, changes to the overall health workforce and a rapid demand for new services require that pharmacists demonstrate discipline-specific skills and also highly-developed interpersonal and problem solving skills along with the ability to adapt and respond to changing health needs. Pharmacy accreditation bodies provide competency standards; however, these standards are often evident in the curriculum implicitly rather than explicitly. The project provides a table that maps pharmacy competencies against three typical universities’ graduate attributes (p.33) and argues (based on the literature) that placements are particularly relevant to enhance oral and written communication, problem-solving, analysis, critical evaluation, information literacy, teamwork, ethics, leadership, and decision-making. In fact, pharmacy competencies, although embedded in the curriculum prior to final year placements, are primarily assessed during placement. The project report provides an excellent overview of experiential learning theory in relation to placements and provides best practice examples for preparing students, assessment, broadening placement opportunities, and the evaluation and quality indicators for pharmacy placements.

Highlighted resources:
project report includes excellent materials on experiential learning, assessment and reflective learning, including examples from other disciplines (Chapter 3)

Safeguarding Australians: mapping the strengths, challenges and gaps toward sustainable improvements in learning outcomes from diverse models of ohs education (DS7-622) (2007)

The overall aim of this project was to facilitate the alignment of occupational health and safety (OHS) education with evolving workforce requirements by providing an evidence base from which informed decisions can be made. Using an action research methodology an online survey instrument (qualitative and quantitative items) was developed to gather stakeholder perceptions. It should be noted that professionals were overwhelmingly represented in the survey (420), whilst 22 educators, 31 Registered Training Organisations and only 21 graduates responded. The project outcomes have included the establishment of the Academy of OHS Education and Research as a community of practice, which has been embraced by the Safety Institute of Australia and embedded within the OHS Educators’ Chapter. The Safety Institute of Australia has committed funding to support the Academy into the future. Four objectives have been identified for the Academy, and they include: through engagement with key stakeholders, the identification and development of core learning outcomes from university-based OHS programs in Australia. The project identified three guidelines for the sustainable development of university education for generalist OHS professionals: generalist OHS professionals need university education, generalist OHS professionals need a multidisciplinary grounding, and they also need a work-integrated-learning model of education.

Information technology

Managing educational change in ICT discipline at tertiary education (DS6-600) (2006)

This project is described as a scoping study in ICT higher education. Taking a
stakeholder approach, the project identified three key stakeholder groups from whom to collect data on their perceptions of ICT curriculum: academic staff, recent graduates and employers. Academics struggled with an overcrowded curriculum, having to include technical knowledge whilst at the same time developing **generic attributes**. Work integrated learning was seen as particularly desirable as a means to provide authentic learning experiences. The study found that there was a disparity between the abilities identified as important to a graduates’ performance at work and graduates’ own perception of how well their university course was in developing those abilities (including communication, teamwork, problem-solving, the organisation of information, project management, client liaison and technical expertise). Many graduates identified that universities had failed to adequately develop their interpersonal and personal skills, and business and industry knowledge. Most employers were happy that graduates were competent in ICT knowledge but identified weaknesses in communication and problem-solving, self-management, initiative, planning abilities and independent learning. Teamwork, however, was regarded as well developed.

**Management and commerce**

**Accounting for the future (DS7-619) (2007)**

This project took a stakeholder approach to identifying the **non-technical, or soft-skills** (eg communication, interpersonal and critical thinking skills) required by **accountants** in the next five to ten years. Stakeholders included: employers of accounting graduates, professional accounting bodies, the public sector, and recent and current accounting students. The project aimed to:

- Identify the general consensus as to the relative importance of key technical and non-technical skills for graduates of professional accounting programs who have to meet the challenges of the profession over the next five to ten years
- Identify the range of non-technical skills required of professional accountants over the next five to ten years
- Identify examples of best practice for the embedding of relevant non-technical skills in professional accounting programs

Results showed that while technical skills are crucial, **non-technical skills such as communication, teamwork and self-management are very important**, particularly in larger organisations. Those graduate skills perceived as least developed were communication and problem solving.

**Highlighted resources:**
- Strategies for embedding non-technical skills into the accounting curricula

**Business as usual: a collaborative and inclusive investigation of existing resources, strengths, gaps and challenges to be addressed for sustainability in teaching and learning in Australian university business faculties (DS6-604) (2006)**

This project aimed to identify disciplinary strengths, gaps and challenges within the discipline of business. In collaboration with the Australian Business Deans’ Council, it sought to identify areas where more funding could be sourced to improve the quality of student learning. Ten key learning and teaching issues were identified, and of this ten, three were clustered and prioritised for immediate action including:

- Building **professionally-relevant learning and industry engagement** in the business curriculum
• Building and assessing the development of generic skills across the business curriculum
• Valuing quality teaching in business education.

The project emphasises **core knowledge, graduate attributes, assessment and employability achieved through curriculum mapping and constructive alignment.** Similarly, the complexities of both WIL (and the competition for work placements) and embedding and achieving graduate attribute outcomes are acknowledged.

**Highlighted resources:**
- Literature review of Business teaching and learning issues, including graduate and generic skills, **project report** (Section 4)

**Facilitating staff and student engagement with graduate attribute development, assessment and standards in business faculties (PP7-322) (2007)**

The aim of this project was to promote graduate attribute development in Business education through engagement of staff and students with **learning and assessment processes that embed graduate attribute development** through a two part approach:
- Using the online assessment system, ReView, staff engaged with graduate attributes within set assignments
- Students were then encouraged to engage with the attributes through self-evaluation of their performance for each criterion.

A social constructivist approach to graduate attributes was adopted, whereby assessment processes, criteria and standards were framed within an active engagement and participation of staff and students. For this project, graduate attributes were defined as **a broad range of personal and professional qualities and skills, together with the ability to understand and apply discipline-knowledge.** Outcomes include
- An increase in staff awareness of graduate attributes, developing assessment criteria and establishing feedback mechanisms aligned with graduate attributes
- Improved student awareness of graduate attributes and understanding of assessment criteria
- Implementation of online moderation, and
- Development of a community of practice.

**Lessons learnt**
- Graduate attributes need to be specifically related to student learning to be valued and recognised. This can be achieved by aligning the attributes with the curriculum when discussing assessment requirements in the unit or by incorporating the business employer perspectives in relation to the graduate attributes.
- Academic staff require several iterations of support to develop adequate assessment criteria that relate to graduate attributes.
- Business academics are more likely to fully engage in graduate attribute development and assessment if the process is clearly linked to professional development and is presented as an appropriate and legitimate method for advancing individual staff immersion in cutting edge pedagogical thinking.
- Any online assessment system needs to be used with care or support as instrumental approaches.

**Highlighted resources:**
- Project website
• Final report

Natural and physical sciences

Extending teaching and learning initiatives in the cross-disciplinary field of biotechnology (DS6-601) (2006)

This project was a scoping study aimed at identifying gaps and opportunities for improvement of biotechnology learning and teaching in higher education in Australia. The project identified a number of factors with significant potential to impact on biotechnology learning and teaching, including:

1. Relationships between university programs and industry, including placement of students for vital industry experience and supporting a growing professional identify within the industry
2. The inherently interdisciplinary nature of biotechnology degree programs within discipline-based universities and scientific communities
3. Pressures and opportunities within the university for improving teaching in areas such as graduate attribute development

According to this report, biotechnology programs need to focus on developing the skills required for integrating discipline expertise into the environment of biotechnology and on developing adaptability and problem solving in graduates. Graduates will need to be flexible, strong in core knowledge, and also quick to pick up on new technologies and apply them to an industry context. The report identifies fieldwork and other WIL learning experiences as an important element in developing such graduates. The first three years of the Flinders, Monash and UQ degrees were mapped against generic attributes. The mapping exercise showed that ethical skills were the attributes least well attended to, along with personal and interpersonal skills.

Highlighted resource:
A pilot of graduate attribute mapping across three courses (project report: Appendix 4).

Forging new directions in physics education in Australian universities (DS6-607) (2006)

This project focused on service teaching, undergraduate experimentation and graduates in the workforce. In graduates in the workforce, the project identified graduate destinations and employer expectations as a means to explore current course structure and learning activities. The key results included the recognition that graduates of physics had good problem solving skills. However, other skill sets such as communication and planning were less developed.

Highlighted resource:
- Graduates in the workforce report

Programmatic approach to developing scientific writing embedded in BSc courses—Dr Roger Moni—ALTC Associate Fellow (2007)

This fellowship aimed to enhance the teaching and assessment of written communication in the Bachelor of Nursing through engaging university staff with professional development with the framework identified. The framework to explore writing in the nursing curriculum incorporates:

- Study Skills (lowest level, where writing is taught and assessed)
- Academic Socialisation (students achieve standard required levels of writing underpinned by scholarship) and
- Academic Literacies (students are able to travel different academic writing genres and are acculturated into discipline specific academic writing styles).

The fellowship and associated activities are predicated on the notion that writing plays
an important role in the development of reflective and higher-order thinking.

Highlighted resources
- An [EndNote database](#) of references on writing in nursing education


Based on the assumption that laboratory work is central to science education, this project aimed to determine the value of current teaching methods in laboratories. To achieve this, the project researched, through a grounded theory approach, what is happening in first-year laboratory sessions and how it is happening. The study looked at a range of science disciplines (chemistry, biology and physics) and focused on first-year mainstream laboratory work in nine universities. The project found that academics had little awareness of employment opportunities for science graduates and that there was little, if any, acknowledgement of the diversity of students’ backgrounds in science. The study also found that most laboratory demonstrators were graduate students who had little or no training or induction. Due to a lack of knowledge about teaching and learning laboratory classes were thus reduced to a transmission model. Exceptions existed but this was the result of individual efforts and a personal interest in teaching and learning. The project developed nine recommendations that address four areas including: the assumptions behind laboratory work and laboratory classes as a unique learning environment, first-year student profiles, generic skills in the laboratory, demonstrators, and the use of simulation.

Highlighted resource:
- Generic skills in the laboratory ([project report](#), commencing p.57)

Society and culture

Benchmarking archaeology honours degrees at Australian universities (PP6-53) (2006)

This project developed subject benchmarks for archaeological qualifications, acknowledging that there are perceived shortcoming in archaeological degrees by both students and employers. A four year Bachelor degree with Honours is seen as the fundamental level of academic achievement required to gain entry into the profession of archaeology, hence the project’s focus on an Honours degree. The project aimed to bring academics responsible for teaching archaeology together to determine standards, arguing that it should be academics, not employers, responsible for determining the learning outcomes of archaeological degrees. The major product of the project is the document *By degrees: Benchmarking archaeology degrees in Australian universities*. This document was drafted by a representative working group from all Australian university providers of archaeology and is the first of its kind. According to the authors, it provides a shared understanding of student learning outcomes within the discipline and should support the development of common expectations of graduates.

Designing a diverse, future-oriented vision for undergraduate psychology in Australia (DS6-603) (2006)

This project built on a fellowship ("Sustainable and evidence-based learning and teaching approaches to the undergraduate psychology curriculum") as well as ALTC “Learning Outcomes and Curriculum Development in Psychology”. The project aims
developing and articulating graduate attributes for psychology education. Within the project there is a strong emphasis on graduate attributes, their alignment with accreditation requirements, and the alignment of assessment and learning outcomes within a graduate attribute framework.

Highlighted resources:
A resource to support academics wishing to embed graduate attributes, including formative and summative assessment processes, is available at the Australian Psychology Accreditation Council.

Developing an integrated national curriculum for the education of the social work and human services workforce (DS7-627) (2007)

The project analyses the national curriculum and workforce needs of the social work and human services. Rapid growth in the social work and human services workforce has meant that there is an undersupply of professionally qualified social work and human service practitioners. Furthermore, the ageing workforce presents challenges as current practitioners retire, limited career and salary structures create disincentives to recruitment and retention, and there is a highly diverse qualification base across the workforce (which fails to match the specialist knowledge and skills required of practitioners). The project was a scoping study which aimed to:

- Provide an overview of the changing higher education and vocational training policy context and analyse the implications for social work and human services education in the higher education and VET sector
- Analyse the structure and curriculum content of social work and human services curriculum across Australia
- Outline workforce outcomes and trends relevant to the social work and human services workforce
- Identify the key curriculum and workforce issues facing the sector
- Present recommendations for addressing these issues, including recommendations for improving the integration of curriculum and national workforce planning in the rapidly expanding social work and human services workforce.

Social work degrees are subject to accreditation by the Australian Association of Social Work, and programs must meet certain curriculum requirements including at least 400 hours of supervised field education. Generally speaking the emphasis is on undergraduate programs as postgraduate program are limited. Due to a lack of employer involvement with curriculum there has been criticism from employers regarding an overemphasis in tertiary qualifications on theoretical considerations. Finally, the project provides a number of recommendations which are related to managing workforce needs.

Learning and teaching in the discipline of law: achieving and sustaining excellence in a changed and changing environment (DS6-597) (2006)

Conducted under the auspices of the Council of Australian Law Deans (CALD), this project closely examined a number of areas associated with high-quality learning and teaching outcomes for a diverse range of law students including: graduate attributes, ethics, professionalism and service, standards, building sustainability, and exploring issues of law student mental health. The project adopted a stakeholder approach and engaged CALD members, legal academics and law students. The project is, in effect, a scoping study of learning and teaching practices in the 32 existing Australian law schools. As part of this study, graduate attributes from UTS are mapped against 18 core law subjects and the project outlines different levels of achievement in different law schools in embedding and assessing graduate attributes, although those
attributes are sometimes university attributes and sometimes discipline attributes. The project reports a range of practices from limited engagement with graduate attributes to highly developed (clearly aligned learning outcomes, assessment and the production of rubrics). There is a recognition in the project report that systematic approaches to mapping graduate attributes, their assessment and scaffolding across the degree program is required if the desired capabilities are to be developed in law students with a high value placed on professional skills and attitudes (ethics, professionalism and service).

Highlighted resources:
- project report, Chapter 5: useful background information on graduate attributes, including strategies for teaching staff engagement
- Some innovations in assessment in legal education

Sociology in Australia: a scoping study (DS7-623) (2007)

The aim of this scoping study was to gain an overview of the extent and nature of sociology teaching in Australian universities and some understanding of the most pressing issues faced by teaching staff. The study found that most of the 37 public universities (all but 2) offered sociology subjects. Significantly, despite this presence sociology as a discipline is not visible and this positioning mirrors the discipline's character. The “mapping” of sociology subjects was carried out through perusing university websites and contacting relevant staff. The project reports that it was often difficult to gather information as it was not readily available and attempts to contact sociology staff were sometimes unsuccessful. The majority of the issues facing sociology are consistent with issues facing higher education. Sociology also has specific challenges related to the discipline which include identity issues and fragmentation (relating to different schools of theory within sociology), and a general lack of definition due to the reflexive nature of sociology.

Teacher education
Developing primary teacher education students’ professional capacities for children’s diverse mathematics achievement and learning needs (CG8-737) (2008)

This project aimed to enhance the capacity of primary teacher education students’ to cater for the diverse achievement and learning needs of primary school students in the discipline of mathematics. Diversity is used within the project to refer to children’s ages and achievement levels, interests, backgrounds, learning styles, learning and social skills, rates of learning, and learning environments. Indigenous children and children in regional, rural and remote locations in Western Australia were also considered diverse in the context of the project. Drawing on the assumption that mathematics teaching has changed little over time, the project recognised the need for enhanced teaching strategies particularly for students from diverse backgrounds. The project was underpinned by two action research cycles within the Bachelor of Education (Primary and Early Childhood) programs at Curtin University. The project used authentic learning and assessment tasks to demonstrate an improvement in the students’ capacity to better cater for diverse learning needs in primary school mathematics. The project demonstrated that aligning the assessment with the attributes or capabilities required of the graduate enhanced the students’ capacity in that area. Furthermore, providing authentic learning opportunities strengthened achievement. For example, the students were able to demonstrate an increased awareness and
understanding of the impact of diversity on learning styles and a wider array of strategies and factors in teaching mathematics including: using a variety of groupings, using open-ended tasks, extending or simplifying tasks, using a range of materials, considering children's interests, cultural and social backgrounds, and being reflective and flexible as a teacher. Significantly, the project appears to have enhanced other generic capabilities including increased ability to problem solve, increased critical thinking, and a greater capacity for reflection.

Highlighted resources:
Resources for primary education available here.

Practicum partnerships: exploring models of practicum organisation in teacher education for a standards based profession (PP7-323) (2007)

This project examined the professional learning experiences of secondary education pre-service teachers in programs offered by eight higher education providers in Victoria. Informed by the Victorian Institute of Teaching (VIT) Professional Standards for Graduating Teachers, the study explored the placement component of teacher education as well as issues related to curriculum, feedback and assessment processes and resourcing for placements and their coordination. The findings of the study demonstrate that the practicum component needs to be aligned with the VIT Professional Standards for Graduating Teachers as more often than not their alignment with the placement requirements or expectations tended to be coincidental rather than deliberate. Supervising teachers also needed more support and training to ensure that they understood the goals of placement in relation to these standards. The report also calls for more monitoring of placement quality as student teachers experience appeared to vary tremendously dependent on their placement and the context in which it was experienced (i.e. which supervising teacher they received and which school they were placed at). Resourcing placement programs was also identified as an issue relating to improving the quality of the learning experience for student teachers whilst on placement. The project findings reflect issues common to many placement or fieldwork programs around resourcing, managing relationships, moderating assessment, educating and communicating with placement supervisors expectations, and educating and communicating expectations for students. The report includes seven detailed recommendations that deal with aligning the placement with the VIT Professional Standards for Graduating Teachers across a range of important factors relating to the achievement of professional capabilities (e.g. summative and formative assessment, curriculum issues, length of placement, more effective placement coordination, effective resourcing).
ALTC projects and fellowships in progress: specific disciplines

The year at the end of each title is the year funded.

**Architecture and building**


This project will develop an approach to documenting assessment of practicum practices and design an online system to enable continuous review and improvement of such assessment for the professions of teaching and social work. Professional practicum in authentic practice settings, and its assessment, are critical to the education of students in many professions, including teaching and social work; it enables students to move from intellectual understanding to its application in practice. While compliance with professional standards is required, the diverse and variable nature of practice settings, as well as the subjective nature of professional judgment involved, means that consistent and equitable assessment presents both challenge and stress for many practitioners and educators. By using a participatory approach to the design of assessment, this project will develop a design pattern methodology and a number of tools to assist with documenting, reviewing and improving assessment practices. Another outcome will be a compilation of current assessment practices in Australian universities. ([More](#))

**Facilitating WIL through skills-enabled e-portfolios in the disciplines of construction and nursing (PP9-1283) (2009)**

The professional institutions accrediting the construction management and nursing professions have developed well defined competency requirements. These disciplines are therefore in a similar position to provide students with opportunities to relate these competencies to the skills they develop during their time at university, (including their work integrated learning (WIL) and other life experiences) through e-portfolios. This study will develop a design brief and specifications for a resource that will be readily transferable to other disciplines. ([More](#))

**Health**

**Curriculum renewal and interprofessional health education: establishing capabilities, outcomes and standards (PP10-1741) (2010)**

This proposal responds to the urgent need for curriculum renewal in health education - in particular, the need to graduate students from all health professions with well-developed interprofessional practice (IPP) capabilities. IPP capabilities are identified as essential for delivering health services that are safer, more effective, and more sustainable. Significant interprofessional education (IPE) initiatives have occurred internationally. However, within the Australian higher education context, IPE remains relatively undeveloped, and is not well integrated with core elements of the curriculum. In addressing this national challenge, the project will contribute in two areas. Firstly, it will produce and disseminate a range of IPE curriculum resources: a curriculum framework, generic capability statements, learning
outcomes and assessment methods. Secondly, it will produce and disseminate resources to guide and support curriculum change. To maximise stakeholder buy-in and uptake, the project will build on existing curriculum development initiatives and utilise participatory methods. (More)

Harmonising higher education and professional quality assurance processes for the assessment of learning outcomes in health (SP10-1856) (2010)

The outcomes of the ALTC Learning and Teaching Academic Standards project have reinforced the importance of ensuring ongoing alignment between threshold learning outcomes and professional accreditation standards. This harmonising project will work across, and with, higher education institutions and healthcare professional accreditation agencies to identify and match the goals and expectations of educational, professional and governmental institutions in relation to quality assurance activities. Within a framework that is organised around the threshold learning outcomes, information will be captured about teaching and learning practices, designs and environments, and assessment approaches that underpin contemporary healthcare professional education. The project will specifically focus on a subset of health professions including medicine, dentistry, nursing and physiotherapy as demonstration disciplines. A detailed analysis within each of these demonstration disciplines will directly inform development of the framework that can subsequently be more widely adopted. (More)

Natural and physical sciences

New media to develop graduate attributes of science students (CG9-1111) (2009)

This project will enable science students to gain new media communication skills, preparing them to be professionals who can engage the public on issues involving science. The students will learn from science lecturers coached by science communication academics. This partnership enables science communication to be addressed within core science subjects. Members of this cross-disciplinary community of practice will engage students in a multimedia web publication as a form of authentic learning, a favoured avenue for graduate attribute development. Participatory design of teaching materials will include ‘early adopter’ science lecturers recruited at conferences and university workshops. Recruits will be trained to be agents of change, coaching colleagues on these new teaching methods and materials. Evaluation will assess learning impact, ease of use of teaching/learning materials, and quality of the multimedia web publications. Dissemination will occur through workshops and online. (More)

Society and culture

Employability of Bachelor of Arts graduates (CG9-1156) (2009)

This project builds on the ALTC-funded BA scoping project, which identified five key models of the contemporary BA and noted that arts graduates are not a homogenous cohort in terms of their employability prospects. The main focus of this
project is to conduct in-depth research into selected Australasian case studies of BA programs, in different institutional and geographic contexts, in order to provide insight into the employability of graduates in these different settings. Interviews will be conducted with employers, students and academics. These case studies will be complemented by comparative, but less detailed investigations into a broader suite of BA programs across a number of Australian universities. It is anticipated that this broad coverage of BA programs will provide a robust underpinning to the findings of this study which will be disseminated throughout the sector. (More)
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Education 2015

Preamble
Education is any university’s core business. It is what distinguishes a research intensive university like the ANU from a world class research institute. CECS has a history of bold innovation in education with unique degree programs such as the bachelor level systems engineering program, the elite R&D degrees or the enhanced PhD study program. This document provides a set of goals and strategies that will enable CECS to maintain this level of educational leadership into the future.

Vision
To provide our students with a unique research-led education that instills curiosity and equips them with the knowledge and skills to articulate and solve problems that are yet to be encountered using technology that is yet to be developed.

The Environment
Education in CECS is delivered through the two research schools and is currently mainly focused on Bachelor and Masters level degree programs and a small number of associated extension and pathway programs. Additionally, there is a sprinkling of educational offerings to HDR students and the occasional public seminar and other outreach activity.

The principal educational challenges facing CECS are mostly not unique to us but are shared across the sector. They include long term shifts in the demography of the student body, increased internationalization, changes in student expectations and learning culture, a weak medium-term funding environment and disruption by digital technologies. Somewhat unique to CECS are the challenges associated with our relatively small scale, necessitating a strong focus on a small number of high quality programs.

Goals
1. Attract excellent students to all of our educational offerings.
   - Clearly articulate the unique value proposition of our degree programs and ensure that all staff are able to do so when communicating with potential students.
   - Engage in a small number of strategic international partnerships to establish exchange and articulation programs that deliver a reliable stream of high quality students.
   - Create targeted pathways for strategically important groups of domestic students.
   - Maintain or strengthen high entry standards through a combination of external and internal entry tests.
   - Involve high profile academic staff in the marketing of our educational programs.

2. Evolve our core programs based on high level advice from external stakeholders, student feedback and robust marketing and graduate outcome and destination data.
   - Base decisions on program level changes on all of educational, strategic, financial and political considerations including how they impact on the overall educational vision.
   - Establish a 5 year program review cycle with a final decision point in between external accreditation visits.
   - Maintain a small number of high quality degree programs both at Bachelor and Masters level.
3. Explore **innovative educational offerings** to complement the core degree programs and reach non-traditional student cohorts, including mid-career professionals.
   - Engage with the Public Service, the Military and industry to explore opportunities for targeted offerings in areas of educational or research leadership.
   - Focus on a small number of carefully selected initiatives.
   - Approach program delivery in this space with a business mindset and ensure that all parties derive strong benefits from any new initiative.

4. Support **modern high quality teaching methods** throughout our educational offerings.
   - Support small scale high quality educational research in both schools.
   - Conduct carefully controlled experiments with contemporary learning support and teaching methods to enable collection of robust data in this space.
   - Establish an online repository of teaching materials to enable portfolio approaches to course delivery.
   - Establish a 5 year course review cycle with a focus on delivery and assessment.

5. Foster a **culture of best practice in support and administration** of teaching programs across both schools.
   - Increase the levels of literacy in administrative and legislative requirements of course and program convenors.
   - Regularly review critical administrative processes with a focus on efficiency and compliance.
   - Provide strong academic leadership to the provision of technical and IT support services.

6. Institute **robust quality control mechanisms** at course and program level.
   - Establish a regular external benchmarking cycle at both the course and program level.
   - Institute a system of peer review of teaching.
   - Strengthen the role and profile of course convenors to provide oversight of teaching activities.
   - Clearly articulate expectations of educational leadership for academic promotion.

7. Focus on **outcomes** for our students.
   - Approach curriculum design with a view towards graduate outcomes and skills development.
   - Provide an environment that is supportive of extracurricular learning activities.
   - Clearly articulate what students gain from studying with us.
   - Regularly collect and review data on actual graduate outcomes and employability and use this data to inform program review processes.
Need to specify 48 units of AQF Level 8 courses in all Honours programs (ANU Requirement from 2016)

**BSEng**

COMP4500A or COMP4540A  
COMP4500B or COMP4540B  
COMP4xxxxA or COMP4540C  
COMP4xxxxB or COMP4540D

/* Needs modification to the requirements to insist on 12u of comp4xxx instead of 12u of comp3xxx/comp4xxx, for those students that do comp4500 */

COMP4130  
COMP3530 (modified to cover AQF8)  
ENGN3230 (from the Engineering proposal)

COMP3120 (modified to cover AQF8. Engineering is proposing something similar for ENGN3221) OR replace this with 4xxx equivalent of COMP8110

**BAC**

COMP3530 (modified to cover AQF8)  
COMP3600 (modified to cover AQF8)  
COMP3630

COMP4550 or  
COMP4560 and 12 units of 4000-level COMP

COMP3120 (modified to cover AQF8) or  
MGMT3027 (looks like AQF8)

**BAC(R&D)**

COMP3530 (modified to cover AQF8)  
COMP3630  
COMP3550 (12u R&D project - small teams)  
COMP4550 (24u research project - individual)
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Peer Review Process

Course Convenor’s report

The Convenor of the course will provide a report, no more than 5 pages in length, that includes all of the relevant information regarding the course. This will include the following:

1. Links to the course page on P&C.
3. Links to the course home page.
4. A description of the delivery of the course (mode of delivery, relationship between lectures, tutorials/labs and assignments. How these map to the learning outcomes).
5. Examples of marked assessment items (including feedback).
6. Feedback regarding the course, include informal feedback and the SELS responses to the open ended questions.
7. Any other information that may be required of them by the peer review group.

Peer review

The peer review will be conducted by a small group of 3-4 people. They will read the Convenor’s report for each of the courses under review and ask for any other information that may be required, as appropriate. The group will produce a short report, no more than 2 pages in length, identifying issues with the course, if any, and providing suggestions for improvement. This report will be handed over to the Chair of the CDC. It is anticipated that the workload for each member of the group will be no more than a day’s worth of work. It is expected that the review process will take no longer than a month, from the time all of the Convenors reports are made available to the peer review group.

The questions that the group addresses may include the following:

1. Are the lecture material, tutorial/lab material and assessment related to the course objectives?
2. Are all the course objectives covered by the assessment?
3. Are the structure of the course and the teaching modes (projects, laboratory reports, seminars, lectures, etc.) supportive of the students in achieving their learning outcomes?
4. Is all of the course material available on the course website? Is it easy to access and navigate?
5. Is the feedback provided to the submitted assessment items timely and appropriate?
Current issues related to the CS Postgraduate program

Graduate diploma:

1. **Graduate diploma students can enrol in MCOMP specialisation courses**
   System does not prevent this.

   **RECOMMENDATION** – a rule that limits specialisation courses to MCOMP enrolled students only – anyone else needs a permission code.

   This would enable us to ascertain the student’s background knowledge to determine suitability and potential to actually complete the course.

2. **Little difference between entry requirements for Grad. Dip. and the MCOMP**

   **MCOMP entry requirements:** A Bachelor degree or international equivalent with an average mark of at least 65% and with at least three courses (units of study) in the fields of computing and/or maths

   **Grad. Dip. entry requirements:** Admission requires an approved bachelor degree in a science, engineering or related discipline with a credit average (or equivalent) and with at least one programming course and two mathematics courses in the areas of discrete mathematics, calculus, linear algebra and statistics.

   Students without a degree but who have at least three years relevant work experience, or a combination of qualifications and experience, may also receive admission.

   **RECOMMENDATION** – modify the Grad. Dip. entry rules to remove the requirement for an approved bachelor degree in science, engineering or related discipline and reword to something along the lines of *A Bachelor degree or international equivalent with an average mark of at least 65%*. This is in-line with entry requirements for other degrees such as the MBIS and Graduate Diploma in Information Systems.

3. **Graduate diploma students articulate straight into the MCOMP enabling them to complete the MCOMP in the same time as students who entered the MCOMP directly**

   Students completing the Grad. Dip. either did not have the formal background – Bachelor degree in Computer Science or Software Engineering – or did not perform sufficiently well to meet our entry standards.

   At the end of the Grad. Dip. we can assume that in a very narrow area they have reached Bachelor standard. To allow them to graduate from a Masters in only 12 months further study suggests that their knowledge at the end of the Grad. Dip. is higher than Bachelor – it isn’t.

   **RECOMMENDATION** – require Grad. Dip. transfer students to take introductory / transition courses for specialisation courses, meaning they would require an additional semester to complete the MCOMP. Students who had the requisite and assumed knowledge would apply for and receive exemptions for introductory / transition courses.

   This proposal may affect international enrolment. Currently, according to Paul Melloy,
students who do not meet entry for the MCOMP only accept entry into the Grad. Dip because they can graduate in the same length of time with an MCOMP as if we took them straight in.

4. Grad. Dip. does not include an introductory or transition math course in its core
Many students entering via this pathway do not have any university mathematics in their background and even if they do, chances are they have not performed well in this in their Bachelor studies.
Without MATH in the core, this program should be an exit only program, as it does not provide sufficient background for students to transit to MCOMP. Importantly, without MATH in the core of the Graduate Diploma we have no way of providing a serious pathway for those students who do not have a background in computing / science / math to enter our Masters program. Another option could be to limit students without maths to taking the Software Engineering specialisation. This would be very difficult to police however.

RECOMMENDATION – add an appropriate MATH course to the core. Students who had the requisite and assumed knowledge would apply for and receive exemptions for this course.
This recommendation may require us to develop a masters equivalent of some of the undergraduate MATH courses included in our Bachelor degrees, as currently the Maths school does not have any introductory or transition math courses.

Master of Computing

The issues raised under point 3, make student planning particularly difficult. If they do not carefully plan their enrolment taking note of odds and evens and when pre-requisite / assumed knowledge courses are offered, or they fail a course along the way, it can mean they can't gain the specialisation they desire or even stay an extra semester.

1. Most courses do not have formally specified pre-requisites
It appears that underpinning the design of the Masters was the assumption that all those entering would have a strong background in computer science, programming and mathematics. This is not the case.

   Entry requirements to the Masters of Computing:
   
   A Bachelor degree or international equivalent with an average mark of at least 65% and with at least three courses (units of study) in the fields of computing and/or maths

Many students admitted to the program have done engineering, science or math degrees not computer science. Some have no computing at all and some have no maths. Many have completed a Bachelor in Computer Science, Software Engineering, IT or Information Systems at an overseas university that seem not to include basic programming concepts within their program. Even though many of these students have completed more than one “programming” course, they may only have learned HTML or Javascript or another scripting language and know little about formal programming concepts and data structures.
Without formal specification of pre-requisites we have no control over who enrols in which courses and when. This makes it very difficult to ensure students have the right background to allow them to succeed.

Another issue related to this is that the software engineering specialisation courses mostly have their origins in the old Master of Software Engineering that required students to have a minimum of two years' industry experience before enrolling. As these courses lack formal pre-requisites, many students with only Bachelor study experience and very limited knowledge of software development in general, enrol in these courses in their first semester. While they may pass the courses, I would argue that there can only be very limited, if any, deep learning, i.e. the sort of learning that they will be able to translate into practice. Without at least some context in which to situate their learning, they are unable to be able to do more than learn and regurgitate.

Furthermore, students frequently choose courses because Programs &Courses (P&C) does not specify, and enrolment does not require, a formal pre-requisite course, regardless of what I tell them or what might be written in the course description.

**RECOMMENDATION** – we add formal pre-requisite courses to Programs & Courses as we have for the undergraduate versions of the courses – see attached table of courses comprising the masters specialisations and their associated pre-requisites course (put together from the U/G P&C course listings). Students who have the requisite or assumed knowledge would receive exemptions.

2. **Inadequate core**

With the exception of COMP6442 Software Development, the core of the MCOMP does not include any courses that will ensure students have the requisite and assumed knowledge to complete most specialisations. In addition to COMP6442, the core includes the two professional practice courses and 12 units of project work.

I believe the core should provide the requisite knowledge to enable students to satisfactorily complete their chosen specialisation.

Not all specialisations have the same requisite and assumed knowledge so unless we are careful it may become a problem of leaving enough space to complete the desired specialisation, especially if the student wishes also to complete the ACS professional computing specialisation and even more so if they have received status so they can complete the program in less than 96 units.

**RECOMMENDATION** – investigate whether such an approach is feasible.

One approach could be to develop a "variable" core that depends upon the student’s chosen specialisation meaning that not all students would have the same courses included in their core. This might be implemented by associating courses with individual specialisations. Students would then enrol in their chosen specialisation that would determine the core courses for them.

This approach assumes there is a set of pre-requisite courses for each specification. I believe this is largely the case. For example, most courses in the Computer Systems specialisation have COMP6300, COMP6310 and COMP6360 as pre-requisite and assumed knowledge, while Computational Foundations has COMP6300, COMP6260, COMP6262 and perhaps COMP6466. AI has COMP6262 and COMP6260. Both iHCC and
Software Eng. have fewer, more general pre-requisites, such as completed COMP6700/6710 or COMP6442 and occasionally COMP6311 and / or COMP6240. The technical depth of students completing these specialisations could be improved by judicious selection of courses to include in the core for them.

3. **Poorly planned semester and year course offerings**
   
   a. **Limited, if any, connection between transitional / pre-requisite course offerings and specialisation offerings**
      
      There is limited, if any, connection between when transitional / pre-requisite courses are offered and their related specialisation courses. The problems this gives rise to are compounded by the odds and evens offerings of the specialisation courses. This often leaves students unable to take the courses / specialisations they wish. Frequently the pre-requisite and actual course are offered in the same semester; for example COMP6262 Logic, which is a pre-requisite for COMP6320 Artificial Intelligence, are both offered in first semester.
   
   b. **Too many specialisation courses are only offered every two years**
      
      A large proportion of our advanced courses, i.e. 3/4/8000 courses are offered on an odds and evens basis. I understand the resource constraints, both financial and human, that give rise to this situation. For example, all courses within the Computer Systems specialisation are offered only every second year. Depending on the semester and year a student enrolls they may be unable to complete the specialisation for which they enrolled at ANU.
      
      For example, a student enrolling in 2\(^{nd}\) semester 2015, who wants to complete the Computational Foundations specialisation and who does not have a background that includes formal methods, computer systems and possibly also algorithms, must complete both MATH6114 and MATH6203 instead of COMP courses if they are to complete the specialisation.
   
   c. **Unequal distribution across semesters of specialisation courses**
      
      More courses are offered in first semester than in second. When the odds and evens course offerings are factored into this, it can make it very difficult for a student to complete the truly advanced courses in that specialisation.
      
      For example, a student enrolling in 2\(^{nd}\) semester 2015 and wanting to complete the AI specialisation cannot take COMP8620 Advanced topics in AI because it is only offered in 2\(^{nd}\) semester of odd years.

**RECOMMENDATION** – plan carefully both the semester and year in which courses are offered taking account of pre-requisite or assumed knowledge courses as well as follow-on courses. Plan from the point of view of Masters rather than Undergraduate, as there is more flexibility within the UG program. Make sure that planned offerings mesh with the odds and evens offerings.

Potentially reduce the number of courses in each specialisation and offer courses without guaranteed offerings as electives.

4. **Too many courses overlap between some specialisations**
   
   For example, of the 7 courses offered under iHCC four (COMP6365, COMP6490, COMP8400 & COMP8420) are also in AI.
An unintended, positive consequence of this is that it is easier for students who have commenced the AI specialisation to find another specialisation when they have failed AI courses, because often with a single course they can get iHCC instead.

**RECOMMENDATION** – plan specialisation course offerings so that they help deliver on a specified set of outcomes that are sufficiently different between specialisations to make it worth having five distinct specialisations

5. **Too many 6000 series courses in specialisations**

I have been unable to find any formal ruling on this, but given that the AQF allows students to receive up to a maximum of 48 units of credit, I assume this means that the remaining 48 units must be at AQF level 9 to ensure adequate differentiation from Bachelor study.

Many of specialisations have up to half their courses listed on P&C as 6000 level. Students can therefore complete the Masters with less than 48 units of AQF level 9 courses.

**RECOMMENDATION** – all courses included within a specialisation should be at AQF level 9.

This may mean slightly fewer courses included within a specialisation, but if the 6000 transitional courses currently included are included as pre-requisites, students will still get adequate coverage of a particular domain.

6. **Nothing formal to govern mutually exclusive courses**

For example, students can currently enrol in both COMP6311 and COMP8190 despite their very similar content and closely related assessment activities. Currently there is nothing we can do should a student chose to take both of these courses.

**RECOMMENDATION** – as part of the structural planning suggested above, ensure that all mutually exclusive courses are clearly identified and students are automatically prevented from enrolling in them.

7. **Courses in a specialisation appear to be a random collection of courses rather than a set of courses selected to offer a particular outcome**

There is no indication of what the expected outcomes of taking a particular specialisation are, where a student who completes it might gain employment, nor is there any indication of order in which courses might be taken or whether groupings of certain courses will deliver particular outcomes. At the moment, in many instances, the specialisations appear to be little more than a random selection of courses.

**RECOMMENDATION** – as part of the structural planning suggested above, take time to develop a description of the specialisation for inclusion on P&C that provides a meaningful overview of the specialisation, sets out learning outcomes and indicates where students might gain employment. As part of this, develop suggested patterns of enrolment to achieve the outcomes.

8. **Courses within the specialisation that are not confirmed for offer according to the required 3-year rolling plan**

Currently there are a number of courses included in specialisations that either have no projected date of next offer or have uncertainty around when and whether they will be offered. These include COMP8320 Multicore computing, COMP7310 ICT Sustainability,
COMP6353 System Architectural Understanding and the Human Brain, COMP8180 Systems and Software Safety, COMP8440 Free and Open Source Software Development. This practice makes it very hard for students to plan their enrolment patterns, and I believe is tantamount to false advertising. A number of students have expressed real concern that courses such as COMP8320 have no definite date of next offering, saying that course was one of the reasons they chose to enrol at ANU.

**RECOMMENDATION** – only include courses within a specialisation for which we have a planned and confirmed (as much as they can be) date of next offering.

9. **Offering substitute courses for COMP8110**

   Students are confused because we have offered two substitute courses for COMP8110 – BUSN7024 Project Management Principles and MGMT7169 A Management Framework for Business Projects.

   Some students don’t understand that we can vary the rules and so become quite concerned that they won’t be able to complete the specialisation, others have assumed they need to take both.

   Some newly enrolled students are planning to take the courses next year because their friends have told them about them, or they want to take the course this year because their friends are taking it.

   Potentially students will take both COMP8110 and one, or even both of the substitute courses.

   **RECOMMENDATION** – COMP8110 should be offered every year so students starting in second semester do not need to take it in their first semester.
## RSCS Double-Badged Courses 2015

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SELS agreement rate for Q6

Below 50%
1. comp3500
2. comp4130 (twice in a row)
3. comp4500
4. comp8100

Between 50% and 59%
1. comp2300
2. comp3100
3. comp3530
4. comp6340
5. comp6700

Proposed action

First time below the threshold
1. If the course has a SELS score over 50%, is co-badged, with one of the versions having a score over 60%, then the convenor writes a report evaluating the two versions.
2. Else, have a small group (3-4 people) peer review the course and provide feedback.

Second time below the threshold
1. The course is externally audited and based on the feedback, appropriate actions are taken.